

**STATE OF MINNESOTA  
OFFICE OF ADMINISTRATIVE HEARINGS  
FOR THE PUBLIC UTILITIES COMMISSION AND  
THE ENVIRONMENTAL QUALITY BOARD**

In the Matter of the Application for a Certificate  
of Need and a Site Permit by Mankato Energy  
Center, LLC, a wholly-owned subsidiary of  
Calpine Corporation

**FINDINGS OF FACT,  
CONCLUSIONS OF LAW  
AND RECOMMENDATION**

A hearing was held before Allan W. Klein, Administrative Law Judge, on July 12-13, 2004, at the Intergovernmental Center, 10 Civic Center Plaza, Mankato, Minnesota. This hearing was a combined hearing for both the Public Utilities Commission and the Environmental Quality Board. The record closed on August 4, 2004.

Appearances: B. Andrew Brown, Attorney at Law, Dorsey and Whitney LLP, 50 S. Sixth Street, Minneapolis, Minnesota 55402, appeared for and on behalf of Mankato Energy Center, LLC ("Mankato Energy"), a wholly-owned subsidiary of Calpine Corporation. Thomas Erik Bailey, Attorney at Law, Briggs and Morgan, 80 South Eighth Street, Suite 2200, Minneapolis, Minnesota 55155, appeared for and on behalf of Northern States Power Company d/b/a Xcel Energy, Inc. ("Xcel Energy"). Karen Finstad Hammel, Assistant Attorney General, 445 Minnesota Street, Suite 1400, St. Paul, Minnesota 55101-2131, appeared for and on behalf of the DOC. Dwight Wagenius, Assistant Attorney General, Environmental Protection Division, NCL Tower Suite 900, 445 Minnesota Street, St. Paul, Minnesota 55101, appeared for and on behalf of the EQB. David Jacobson, 121 Seventh Place East, Suite 350, St. Paul, Minnesota 55101-2147, participated as part of the PUC staff.

Pursuant to Minn. R. 4400.2950, the Minnesota Environmental Quality Board ("EQB") must make a final decision on a Site Permit application within sixty (60) days after receipt of the record from the Administrative Law Judge. Pursuant to Minn. R. 7829.2700, subp. 1, exceptions to this report relating to issues of Minnesota Public Utilities Commission ("the Commission" or "PUC") jurisdiction, if any, by any party adversely affected must be filed within fifteen (15) days of the mailing date hereof with the Executive Secretary of the PUC, 350 Metro Square Bldg., 121 Seventh Place East, St. Paul, Minnesota 55101-2147. Exceptions must be specific, relevant to the matters at issue in this proceeding, and stated and numbered separately. Proposed Findings of Fact, Conclusions, and Order should be included, and copies thereof shall be served upon all parties.

The PUC will make the final determination on the matter of the Certificate of Need ("CON") and the EQB will make the final determination of the Site Permit, respectively, after the expiration of the period for filing exceptions as set forth above or after oral argument if such is requested and granted in this matter.

Further notice is hereby given that the EQB and the PUC may, at their reasonable discretion, accept, modify, condition, or reject the Administrative Law Judge's Recommendation and that said Recommendation has no legal effect unless expressly adopted by the PUC and the EQB, respectively.

## **STATEMENT OF ISSUES**

Should the Public Utilities Commission grant a Certificate of Need to the Applicant for a large electric power generating plant and transmission lines directly associated with the plant that are necessary to interconnect the plant to the transmission system?

Should the Minnesota Environmental Quality Board issue a Site Permit to the Applicant for a Large Electric Power Generating Plant proposed to be located just north of Mankato, Minnesota?

Based upon the proceedings herein, the Administrative Law Judge makes the following:

## **FINDINGS OF FACT**

### **A. Procedural History and the Parties**

1. The Applicant, Mankato Energy, is a wholly owned subsidiary of Calpine.<sup>1</sup> Calpine was organized in 1984, and is currently one of the world's largest independent power companies. Ex. 40 (J. Shield Pre-Filed Testimony) at 3. In recent years, Calpine has become a major power-plant operator and provider of related services. *Id.* Mankato Energy, which is qualified to do business in Minnesota, was formed by Calpine to develop, construct, and operate the power plant that is the subject of this proceeding. *Id.* at 2; Ex. 45 (K. Morton Pre-Filed Testimony) at 4.

2. On November 25, 2003, Calpine filed a petition with the PUC stating that it intended to submit an Application for a Certificate of Need ("CON Application") to construct a large natural-gas-fired combined cycle electric-power generating plant (hereinafter "the Facility"), at a site just north of the Mankato city limits in Lime Township, Blue Earth County, Minnesota. The petition also requested exemption from certain data requirements and confirmation from the Commission that the scope of the data should relate only to power generated for sale to the wholesale market, excluding data related to power production already certified through a Commission-approved resource plan solicitation.

3. Mankato Energy intends to operate as an independent power producer ("IPP") providing electricity from a portion of the Facility under a contract with Xcel Energy, pursuant to a Commission-approved bidding process. Ex. 40 (J. Shield Pre-Filed Testimony) at 3-5. Mankato Energy will sell power at wholesale from the other portion of the Facility. *Id.* at 3; Ex. 41 (Request for Proposal Documentation); Ex. 42 (PPA).

4. On February 6, 2004, the Commission issued its Order Granting Exemptions from Filing Requirements and Limiting Scope (Ex. 44). The Order granted Calpine's November 25, 2003, request to limit the scope of its CON Application to exclude, with certain qualifications,

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<sup>1</sup> Calpine Corporation opened this docket as the Applicant, but as noted in the ALJ's First Prehearing Order on April 29, 2004, Mankato Energy replaced Calpine as the Applicant.

the equipment associated with the 375 MW to be purchased through Xcel Energy's Commission-approved bidding process. Ex. 43 (Request for Exemption).

5. The Order also granted exemptions from certain data requirements in the CON rules on the grounds that the information to which they relate is unnecessary to determine need. Most of the filing requirements from which Calpine sought relief pertain to regulated utilities. Ex. 44 (Order Granting Exemptions) at 5. The requirements assume the applicant operates a "system," which is a term defined in the rules to include the applicant's assigned service area and all the equipment and facilities used to serve the retail consumers in that assigned service area. Id. Because Calpine has neither retail customers nor an assigned service area, it does not have a system. Id. Therefore, the PUC ruled that information on Calpine's system does not exist, is not relevant to the application, and is not relevant for determining need. Id. Specific data exemptions provided by the PUC included:

- a) Availability of Alternatives – Minn. R. 7849.0250(B)(1-3);
- b) Effects on Rates Systemwide – Minn. R. 7849.0250(C)(7);
- c) System Map – Minn. R. 7849.0250(D);
- d) Peak Demand and System Capacity – Minn. R. 7849.0270 and 7849.0280;
- e) Energy and Conservation Plans – Minn. R. 7840.0290;
- f) Effect of Delay on Systems and Power Pool – Minn. R. 7849.0300;
- g) The Alternative of No Facility – Minn. R. 7849.0340;
- h) Relationship to Promotional Activities – Minn. R. 7849.0240, subp. 2(B).

6. On February 18, 2004, Calpine submitted notice to the EQB that Mankato Energy intended to apply for a Site Permit for a natural gas pipeline under the Alternative Review Process set forth in Minn. Stat. § 116C.575 and specified in Minn. R. 4400.2000 to 4400.2950. Ex. 10 (Letter from Calpine to EQB dated February 18, 2004 regarding Alternative Review). The February 18, 2004, submittal to the EQB also gave notice of the intention to apply for a Route Permit under the Alternative Review Process established by Minn. Stat. § 116I.015 and specified in Minn. R. 4415.0035. Id.

7. On March 2, 2004, Mankato Energy filed its CON Application (Ex. 1 (nonpublic version) and Ex. 1A (public version)) for the portion of the Facility that is not included in its contract with Xcel Energy pursuant to a Commission-approved bidding process. See Ex. 48 (General Arrangement Site Plan Diagram) (showing Facility footprint and added equipment subject to CON). As set forth in Minn. Stat. § 216B.2421, subd. 2, the CON Application encompasses both the large electric power generating plant and transmission lines directly associated with the plant that are necessary to interconnect the plant to the transmission system.

8. On March 4, 2004, Calpine filed a Site Permit Application (Ex. 13) on behalf of Mankato Energy regarding the construction of two natural gas fueled combustion turbine-

generators intended to operate in a combined cycle mode, two heat recovery steam generators, one steam turbine generator, and associated facilities.

9. On March 12, 2004, Minnesotans for an Energy-Efficient Economy ("ME3"), represented by the Minnesota Center for Environmental Advocacy ("MCEA"), and the DOC filed comments on the completeness of Mankato Energy's CON Application.

10. On March 15, 2004, the EQB determined the Site Permit Application was complete (Ex.14).

11. On March 17, 2004, Mankato Energy provided copies of the Site Permit Application and CON Application to the Blue Earth County Library and the City of Mankato Planning and Zoning Department. Ex. 16 (Letter from Wenck Associates, Inc., ("Wenck") to Blue Earth County Library) and Ex. 17 (Letter from Wenck to Planning and Zoning Dept.).

12. On March 18, 2004, Calpine mailed notice of filing of the Site Permit Application and notice of an April 21, 2004, public meeting to persons on the Project Contact List, local officials, adjacent property owners, and interested persons as required by Minn. R. 4400.2300 and 4400.2500. Ex. 32 (Affidavit of Mailing of Notice to Interested Persons). On March 19, 2004, Mankato Energy published notice of filing of the Site Permit Application in the Mankato Free Press, as required by Minn. R. 4400.2300. Additional notice of the Site Permit Application and public meeting was provided by Mankato Energy at an open house held in Mankato on April 6, 2004. Testimony of K. Morton, July 12, 2004, at page 24. Mankato Energy published notice of the April 6 open house in the Mankato Free Press on three separate occasions. Id. The EQB did not publish notice of the April 21, 2004, public meeting in a newspaper of general circulation, nor did it serve local officials with copies of the Notice of Hearing by certified mail, as required by Minn. R. 4400.2500. Hearing Transcript, July 12, 2004, at pages 22-23. The ALJ ruled the failure to publish notice of the public meeting to be harmless error. Hearing Transcript, July 12, 2004, at page 25. The ALJ also now rules that the use of regular mail, rather than certified mail, for the Notice of Hearing, is a harmless error.

13. On March 23, 2004, the Calpine matter came before the PUC as part of its regular meeting agenda. At that meeting, the DOC recommended that the Commission find the application complete pending the submission of the following:

- a) Minn. R. 7849.0250(A)(3) – a projection of the availability of fuel over the projected life of the facility, and any alternate fuels;
- b) Minn. R. 7849.0250(C)(9) – major assumptions in providing the information for the proposed project and its available alternatives, including the project escalation rates for fuel costs and operating and maintenance costs; and
- c) Minn. R. 7849.0310 and 7849.0320 – environmental information on the proposed facility and for each alternative considered.

At the PUC meeting, Mankato Energy agreed to provide the supplementary information requested by the DOC. Also at the meeting, ME3 requested an analysis of a wind-gas combination alternative to the proposed facility, as provided in Minn. R. 7849.0250(B)(5). The Commission voted unanimously to accept the staff recommendation to accept the CON Application as complete contingent upon a supplemental filing of the information requested by the DOC and by ME3.

14. On March 29, 2004, Mankato Energy filed a Supplement to the CON Application (Ex. 2) ("CON Application Supplement") with the PUC. The Supplement included responses to the DOC supplementary information requests and analysis of a wind-gas power alternative to the Facility. Mankato Energy also addressed the wind-gas combination alternative in its testimony. Ex. 45 (K. Morton Pre-Filed Testimony) at 25-30, KJM-7.

15. On April 6, 2004, the PUC issued an Order finding the Calpine Certificate of Need Application Substantially Complete Contingent Upon Additional Filing and Referring the Matter to the Office of Administrative Hearings for a contested case hearing before Administrative Law Judge Allan W. Klein (Ex. 3). The PUC recommended a joint Certificate of Need and Site Permit hearing contingent on EQB concurrence. Id.

16. On April 6, 2004, the PUC issued a Notice and Order for Hearing (Ex. 69) for the Mankato Energy CON proceeding.

17. On April 21, 2004, the EQB held a public meeting in Mankato, Minnesota, to discuss the scope of the Environment Assessment, as required by Minn. R. 4400.2500. The meeting was well attended and comments were received from the public (Exs. 22-27). Hearing Transcript, July 12, 2004, at pages 22-23. The EQB concluded that lack of newspaper publication of notice of the hearing did not result in "any substantial lack in the record or opportunity for full participation in the process." Id. at 23. The EQB's assessment was that they received comments from all the persons from whom comments were expected. Id. See also Finding 12, above.

18. On April 28, 2004, the Administrative Law Judge issued the First Prehearing Order, establishing a Hearing Schedule for the combined Certificate of Need and Site Permit contested case hearing. The Hearing Schedule set the hearing dates for July 12-13, 2004 in Mankato.

19. On April 30, 2004, Mankato Energy filed a Pipeline Permit Application (Ex. 60) with the EQB regarding construction of the natural gas pipeline associated with the Facility. The Facility will connect to the Northern Natural Gas ("NNG") pipeline located approximately 3.2 miles east of the Facility site. Ex. 13 (Site Permit Application) at 3-1 to 3-2.

20. On May 4, 2004, the EQB accepted the Pipeline Permit Application as complete. Ex. 62 (Acceptance of Pipeline Permit Application).

21. On May 20, 2004, the EQB issued the final scoping document for the Mankato Energy Environmental Assessment. Ex. 28 (Environmental Assessment Scoping Decision). EQB Chair Robert Schroeder did not include any other sites for analysis in the Environmental Assessment besides the site proposed by Mankato Energy. See July 21, 2004, EQB letter to Judge Klein containing post-hearing comments for the record. Id. No alternative sites were suggested by any person who participated in the scoping process. Id. Therefore, any site permit that is issued will be for the Mankato site. Id. The EQB mailed the Notice of Availability of Scoping Decision to persons on the Project Contact List. Ex. 29 (Affidavit of Mailing Notice of Availability of Scoping Decision to Persons on the Project Contact List).

22. On May 20, 2004, the EQB passed a resolution authorizing a joint public hearing for the Site Permit and Certificate of Need (Ex. 30).

23. On May 25, 2004, NNG petitioned for intervention in the Mankato Energy proceeding.

24. On June 4, 2004, Excelsior Energy, Inc. ("Excelsior"), petitioned for intervention in the Mankato Energy proceeding.

25. On June 7, 2004, Xcel Energy petitioned for intervention in the Mankato Energy proceeding.

26. On June 14, 2004, Mankato Energy filed an objection to Excelsior's petition for intervention based on assertions that (1) Excelsior possessed no statutory right or authorization to intervene, (2) Excelsior had no legal rights, duties, or privileges that may be determined or affected by the case, and (3) Excelsior is not directly affected by the outcome of the case.

27. On June 15, 2004, the EQB held a public meeting in Mankato, Minnesota, to discuss the proposed pipeline, as required by Minn. R. 4415.0035.

28. On June 17, 2004, notices of public hearings concerning this matter were published in the following newspapers:

- a) The Mankato Free Press (Ex. 35);
- b) The Minneapolis Star Tribune (Ex. 34); and
- c) The St. Paul Pioneer Press (Ex. 33).

29. On June 18, 2004, Mankato Energy submitted pre-filed testimony from:

- a) James J. Shield, Vice President, Business Development, Calpine (Ex. 40);
- b) Kent J. Morton, Project Director, Calpine (Ex. 45 (nonpublic version) and Ex. 45A (public version) with Exs. KJM-1 through KJM-8);
- c) Jason M. Goodwin, P.E., Regional Manager – Safety, Health, and Environmental, Midwest Power Region, Calpine (Ex. 50 with Exs. JMG-1 through JMG-4); and
- d) John A. Rosenkranz, Manager, Gas Origination, Calpine (Ex. 49 with Exs. JAR-1 through JAR-4).

30. On June 18, 2004, the DOC submitted pre-filed testimony from:

- a) Matthew D. Lacey, Public Utilities Rates Analyst, DOC (Ex. 66 (nonpublic version) and Ex. 66A (public version) with Exs. MDL-1 through MDL-10); and
- b) Sachin Shah, Public Utilities Rates Analyst, DOC (Ex. 67 (nonpublic version) and Ex. 67A (public version) with Exs. SS-1 through SS-13).

31. On June 18, 2004, Xcel Energy submitted pre-filed testimony from James Alders, Manager, Regulatory Projects, Governmental and Regulatory Affairs Department of Xcel Energy Services, Inc., the service company subsidiary of Xcel Energy (Ex. 68).

32. On June 22, 2004, the ALJ denied Excelsior's petition for intervention. The ALJ held that Excelsior did not demonstrate that it had rights, duties, or privileges that are determined or interests that are affected by this contested case proceeding within the meaning of Minn. R. 1400.6200, subp. 1, because Excelsior is not scheduled to become operational until 2010, four years after the intended start-up date for the Facility.

33. On June 22, the ALJ issued a Protective Order and adopted by reference a Protective Agreement. The Protective Agreement was executed by Xcel Energy on June 29, 2004, and by Mankato Energy on July 7, 2004.

34. On June 30, 2004, Mankato Energy submitted rebuttal testimony from Kent J. Morton, Project Director, Calpine (Ex. 46 (nonpublic version) and Ex. 46A (public version) with Ex. KJM-9).

35. On July 2, 2004, the EQB issued the Mankato Energy Environmental Assessment (Ex. 36).<sup>2</sup> The EQB published Notice of Availability of the Environmental Assessment in the EQB Monitor on July 5, 2004 (Ex. 37). The EQB mailed the Notice of Availability to all Interested Persons. Ex. 38 (Affidavit of Mailing Notice of Availability to Interested Persons).

36. Pursuant to published notice, hearings were held on three occasions on July 12-13, 2004, at the Intergovernmental Center, 10 Civic Center Plaza, Mankato, Minnesota. Representatives of Mankato Energy, Xcel Energy, the EQB, and the DOC were available to respond to questions. No member of the public chose to comment on the proposed CON or Site Permit. Blue Earth County Commissioner Katy Wortel asked questions concerning the differences between 100% biodiesel and various blends of fuels with smaller amounts of biodiesel (such as 2% biodiesel, 5% biodiesel or 20% biodiesel). She also asked whether air quality impact analysis was done for biofuels or biodiesel (including blends) compared to straight fuel oil. Mark Lindquist of the Minnesota Project asked questions concerning various aspects of biodiesel.

37. On July 22, 2004, Mankato Energy filed an Addendum to Site Permit Application. The Addendum to Site Permit Application provided updated project information to account for certain changes/modifications that occurred since the original Site Permit Application was submitted and supplemented information provided at the Evidentiary Hearing held on July 12, 2004. Specifically, the Addendum to Site Permit Application contained updated information on noise during facility operation, air emissions, and permits and approvals.

38. On July 30, 2004, the PUC approved the Power Purchase Agreement ("PPA") between Xcel Energy and Mankato Energy, with respect to the power provided pursuant to the Commission-approved bidding process.

## **B. The Proposed Project**

### ***General Description of the Facility, the Transmission Interconnection, the Gas Pipeline, and the Location***

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<sup>2</sup> The EQB subsequently withdrew Section 8 of the Environmental Assessment in its entirety at the hearing in Mankato on July 12, 2004. Thus, Section 8 is not part of the record in this proceeding. Section 8 of the EA related to the PUC's Certificate of Need proceeding.

39. The Facility, which is to be named the Mankato Energy Center, will be a natural gas-fired, combined cycle electric generating plant consisting of two combustion turbine generators (“CT”), two heat recovery steam generators (“HRSG”), one steam turbine generator (“ST”), one condenser, one multi-cell mechanical draft evaporative cooling tower, and certain other appurtenant pieces of machinery and equipment. The Facility will be equipped to operate with low sulfur distillate fuel oil as a backup fuel for as many as 875 hours per year per turbine. The Facility will be capable of generating a net electrical output of approximately 505 MW under normal conditions (summer ambient conditions) with the capability of generating an additional 150 MW from duct firing and steam injection to meet peak load demand. Ex. 1 (CON Application) at 2-1 to 2-2. With proper modifications or equipment enhancements, combustion turbines may also be capable of operating on other fuels as diverse as biodiesel, ethanol, methanol, hydrogen, and blended gases. Ex. 45 (K. Morton Pre-Filed Testimony) at 30.

40. The CTs can be operated independently to produce electric power. If only one of the CTs is in operation, the generating capability of the Facility will be approximately 245 MW at summer conditions and 290 MW at winter conditions with an additional 85 MW available from duct firing (both summer and winter). The operation of the second CT generates an additional 245 MW of power at summer conditions and 290 MW of power at winter conditions. Also, an additional 65 MW (both summer and winter) are available from duct firing when the second CT is used in conjunction with the first CT. The power generated in this latter fashion, from the additional CT/HRSG train, is the subject of the CON Application. Ex. 1 (CON Application) at 2-1. In other words, as illustrated by Ex. 48 (General Arrangement Site Plan Diagram) (showing Facility footprint and added equipment subject to CON), the power from the first combustion turbine system is sufficient to produce the power provided pursuant to Power Purchase Agreement (“PPA”) with Xcel Energy. Id. The second turbine will provide additional energy for wholesale markets and is therefore the subject of the CON portion of this proceeding.

41. The advantages of the combined cycle plant over a simple cycle (“peaking”) plant are seen in the relative efficiencies and in air emissions: the same amount of fuel is used to generate approximately 40 percent more electricity in the combined cycle plant, see Ex. 1 (CON Application) at 2-2, and the environmental impacts of the combined cycle plant are less than those of a simple cycle plant, see Ex. 2 (CON Application Supplement) at 22-24. The air emissions from the combined cycle plant operating on natural gas are also less harmful than emissions from either a coal plant, see Ex. 45 (K. Morton Pre-Filed Testimony) at KJM-8 (Air Emissions Comparison), or an integrated gasification combined cycle (“IGCC”) plant, see Ex. 46 (K. Morton Rebuttal Testimony) at KJM-9 (Air Emission Comparison – IGCC and Combined Cycle). Similarly, the efficiency of a combined cycle plant is greater than a coal plant, see Ex. 66 (M. Lacey Pre-Filed Testimony) at 19, or an IGCC plant, see Ex. 46 (K. Morton Rebuttal Testimony) at KJM-9 (Air Emission Comparison – IGCC and Combined Cycle).

42. The proposed facility site consists of approximately 25 acres in Lime Township, Blue Earth County, Minnesota, immediately north of Mankato city limits. Ex. 50 (J. Goodwin Pre-Filed Testimony) at JMG-3 (USGS Site Map). The area is currently zoned for industrial use and serves as a demolition waste landfill and composting facility owned and operated by Southern Minnesota Construction Company, Inc. (“SMC”). Ex. 45 (K. Morton Pre-Filed Testimony) at KJM-1 (Site Location Map). The City of Mankato and Lime Township entered into a Joint Resolution for Orderly Annexation on November 12, 1997, whereby the parties agreed that the City of Mankato would annex areas to be developed for residential, commercial, industrial, and governmental purposes to encourage orderly urban development using municipal services in a responsible, controlled, and environmentally sound manner. Ex. 13 (Site Permit Application) at 2-2 to 2-3.



43. The area surrounding the proposed facility site consists of industrial and light industrial activities, as well as commercial establishments. These include a demolition waste landfill operation, a residential hazardous waste receiving center, a U.S. Postal Service distribution center, an auto salvage yard, and other similar businesses. Ex. 1 (CON Application) at 2-1 to 2-2. The site is adjacent to the Xcel Energy Wilmarth Generating Station and the related Wilmarth electrical substation. Id.

44. The Facility will have direct access to the Wilmarth Substation located approximately 1,000 feet directly west of the site and will not require construction of a lengthy off-site high voltage transmission line ("HVTL"). Ex. 13 (Site Permit Application) 3-2 to 3-4. The interconnection scheme will consist of three high voltage transmission circuits: a 345 kV line and two 115 kV lines. Ex. 36 (Environmental Assessment) at 28. The lines will be built, owned, and operated by Xcel Energy. Ex. 13 (Site Permit Application) 3-2 to 3-4. The proposed HVTL route is entirely on land owned either by Mankato Energy or Xcel Energy. Id. at 2-20; Ex. 36 (Environmental Assessment) at 115.

45. The part of the Facility that is the subject of the CON Application would require only one new 115 kV transmission line to interconnect at the Wilmarth Substation. A 345 kV transmission line and an additional 115 kV line would be constructed as part of the Facility to deliver power provided pursuant to the power purchase agreement with Xcel Energy. See Ex. 46 (K. Morton Rebuttal Testimony) at 4.

46. Xcel Energy's proposed HVTL is directly associated with the Facility and is necessary to interconnect the Facility to the transmission system. Ex. 13 (Site Permit Application) 3-2 to 3-4; Ex. 68 (J. Alders Pre-Filed Testimony) at 2. Issuing a CON for the proposed facility will therefore authorize construction of the proposed HVTL as the necessary interconnection transmission directly associated with the plant under Minn. Stat. § 216B.2421, subd. 1(1).

47. Xcel Energy will apply for a HVTL route permit from the EQB. Ex. 68 (J. Alders Pre-Filed Testimony) at 6.

48. The Facility will connect to the NNG pipeline located approximately 3.2 miles east of the Facility site. Ex. 50 (J. Goodwin Pre-Filed Testimony) at JMG-1 (Pipeline Route Map). Initially, Mankato Energy indicated that gas would be transported from the NNG pipeline to the Facility through a new 12 or 16-inch diameter service distribution line (to be constructed and owned by Mankato Energy), but testimony by Mr. Goodwin at the evidentiary hearing established that Mankato Energy intends to construct a 20-inch diameter pipeline in order to obtain gas pressure at the appropriate levels. Ex. 13 (Site Permit Application) at 3-1 to 3-2; Ex. 60 (Pipeline Routing Permit) at 2-2; Ex. 50 (J. Goodwin Pre-Filed Testimony) at 4; Hearing Transcript, July 12, 2004, at pages 99-100. The proposed route generally follows an existing transmission line right-of-way, minimizing potential impacts to affected landowners. Ex. 13 (Site Permit Application) at 3-1 to 3-2. It is anticipated that the transportation arrangements with NNG will include an expansion of NNG's mainline capacity immediately upstream of Mankato to provide for firm transportation of natural gas from the Northern Border interconnect at Welcome, Minnesota, to the Facility. Ex. 4 (Response to DOC Information Requests 1-39) at 13 (Request No. 6).

49. The pipeline route permit decision will take place in a separate proceeding under Minn. R. 4415.0035, 4415.0040, and 4415.0105. The EQB docket number for the pipeline proceeding is 04-77-PRP-Calpine.

## CERTIFICATE OF NEED

50. Minn. Stat. § 216B.243 prohibits siting or constructing a large electric power generating facility (and transmission lines directly associated with the plant that are necessary to interconnect the plant to the transmission system) in Minnesota until a CON is obtained from the PUC. Minn. Stat. § 216B.243, and Minn. R. 7849.0010 through 7849.0400, set forth the criteria that must be met to establish need for a large electric power generating facility and transmission lines directly associated with the plant that are necessary to interconnect the plant to the transmission system.

### **A. Issuing the CON Would Not Adversely Effect the Future Adequacy, Reliability, or Efficiency of the Energy Supply**

51. As set forth in Minn. R. 7849.0120, a CON must be granted to the applicant if the probable result of denial would be an adverse effect upon the future adequacy, reliability, or efficiency of energy supply to the applicant, to the applicant's customers, or to the people of Minnesota and neighboring states. The criteria to be considered in assessing adequacy, reliability, and efficiency of energy supply are:

- A.1. the accuracy of the applicant's forecast of demand for the type of energy that would be supplied by the proposed facility;
- A.2. the effects of the applicant's existing or expected conservation programs and state and federal conservation programs;
- A.3. the effects of promotional practices of the applicant that may have given rise to the increase in the energy demand, particularly promotional practices which have occurred since 1974;
- A.4. the ability of current facilities and planned facilities not requiring certificates of need to meet the future demand; and
- A.5. the effect of the proposed facility, or a suitable modification thereof, in making efficient use of resources;

#### ***A.1. The accuracy of the applicant's forecast of demand for the type of energy that would be supplied by the proposed facility.***

52. The Mid-Continent Area Power Pool ("MAPP") is the Upper Midwest region's energy reliability organization. Mankato Energy's CON Application includes five separate analyses of demand and energy forecasts for the MAPP region:

- a) The North American Reliability Council ("NERC") *2003-2012 Reliability Assessment* (Ex. 45 at KJM-3);
- b) The NERC *2003/2004 Winter Assessment*;
- c) The MAPP July 1, 2003, *Load and Capability Report*;
- d) The Minnesota DOC's *2001 Minnesota Energy Planning Report* (Ex. 45 at KJM-4); and

e) The Minnesota DOC's 2000 Energy Policy and Conservation Report.

Ex. 1 (CON Application) at 3-1 to 3-6.

53. Each of these reports support Mankato Energy's conclusion that additional generation is needed in the MAPP region to maintain adequate capacity reserve margins. Ex. 66 (M. Lacey Pre-Filed Testimony) at 15. In the Regional Self Assessment contained in the NERC 2003-2012 Reliability Assessment, MAPP predicted that MAPP-US summer peak demand will increase at an average rate of 1.8 percent per year during the 2003-2012 period. Ex. 45 (K. Morton Pre-Filed Testimony) at KJM-3 (Regional Self Assessment at 63). This is consistent with local Minnesota energy usage, which the Department of Commerce estimates to increase at an annual rate of 1.9 percent through 2010. Id. at 14-16 and KJM-4 (2001 Minnesota Energy Planning Report at 27).

54. The 2003 MAPP Load and Capability Report compiled the MAPP-member load forecasts, existing resource capabilities, and projected resource additions in order to calculate the regional electric generation capacity. The report indicates that MAPP members need to build additional capacity. Ex. 1 (CON Application) at 3-1 to 3-6. Increased capacity will be needed to maintain sufficient reserve levels to ensure a safe, reliable system. Id.

55. MAPP predicts energy supply shortfalls in the region beginning in 2006, even assuming that all announced merchant generation is constructed and brought online. Ex. 45 (K. Morton Pre-Filed Testimony) at KJM-3 (NERC Reliability Assessment at 63).

56. Based on the record as a whole, the Administrative Law Judge finds that a need for both additional capacity and energy exists in the MAPP-US region. The MAPP-US reserve capacity is predicted to fall below the MAPP required 15 percent reserve capacity in 2006. Ex. 45 (K. Morton Pre-Filed Testimony) at KJM-3 (NERC Reliability Assessment at 63). The proposed facility would help reduce the reserve capacity deficit and maintain adequate capacity reserve margins. Ex. 45 (K. Morton Pre-Filed Testimony) at 14-16; Ex. 66 (M. Lacey Pre-Filed Testimony) at 15.

***A.2. The effects of the applicant's existing or expected conservation programs and state and federal conservation programs.***

57. As an IPP that does not serve retail customers, Mankato Energy has no existing conservation plans and was exempted from associated application filing requirements. See Ex. 44 (February 6, 2004, PUC Order Granting Exemptions from Filing Requirements and Limiting Scope); Ex. 66 (M. Lacey Pre-Filed Testimony) at 16.

***A.3. The effects of promotional practices of the applicant that may have given rise to the increase in the energy demand, particularly promotional practices which have occurred since 1974.***

58. Mankato Energy does not engage in promotional practices that have increased the demand for electricity and was exempted by the PUC from this application requirement. See Ex. 44 (February 6, 2004, PUC Order Granting Exemptions from Filing Requirements and Limiting Scope); Ex. 66 (M. Lacey Pre-Filed Testimony) at 16.

***A.4. The ability of current facilities and planned facilities not requiring certificates of need to meet the future demand.***

59. Mankato Energy does not have any current facilities and is exempt from this application requirement. See Ex. 44 (February 6, 2004, PUC Order Granting Exemptions from Filing Requirements and Limiting Scope).

60. There is no evidence that alternate facilities that do not require CONs could meet the identified demand for electricity. Ex. 66 (M. Lacey Pre-Filed Testimony) at 17. The DOC has concluded that facilities exempt from a Certificate of Need would not be able to meet the forecasted deficit. Id. at 18.

***A.5. The effect of the proposed facility, or a suitable modification thereof, in making efficient use of resources.***

61. Based on a DOC comparison of efficiency rates for the Facility compared to that of reasonable alternatives, the Facility and its fuel-oil alternative are the most efficient fossil-fueled resources. Ex. 66 (M. Lacey Pre-Filed Testimony) at 19.

62. The Facility is designed to achieve construction and operational efficiencies, conserve resources (land, water, labor, materials, etc.), and meet the expected energy growth needs in Minnesota in a timely manner. The same steam turbine generator, condenser, cooling tower, and appurtenant machinery and equipment of PUC-approved power will be used to supply the additional power that is intended for sale to wholesale customers. Ex. 1 (CON Application) at (iii); Ex. 48 (General Arrangement Site Plan Diagram) (showing Facility footprint and added equipment subject to CON).

63. The Facility will connect to the existing Wilmarth Substation using only about 1,000 feet of transmission lines located entirely on Mankato Energy and Xcel Energy properties. Ex. 13 (Site Permit Application) at 3-2 to 3-4. In addition, the Facility will be within approximately three miles of the existing NNG pipeline, providing a nearby and cost-efficient primary source of natural gas. Id.

64. If the proposed site is approved, the primary fuel, natural gas, will be delivered from the existing NNG mainline. Ex. 13 (Site Permit Application) at 3-1 to 3-2. The backup fuel, low sulfur distillate fuel oil, will be used if natural gas suppliers are unable to provide natural gas during a supply interruption or other event where use of the back-up fuel is required to ensure continued operation of the Facility. Ex. 1 (CON Application) 2-4 to 2-6.

65. The Facility will “recycle” treated water from the nearby Mankato municipal wastewater treatment plant (“WWTP”) system (approximately one mile south of the Facility), which will be diverted from the WWTP for use at the Facility prior to its permitted discharge into the Minnesota River. Ex. 13 (Site Permit Application) at 3-4. The Facility will return non-contact cooling water to the WWTP for discharge through the WWTP discharge outfall. Testimony of J. Goodwin, July 12, 2004, at pages 91-97; Ex. 57 (MEC Cooling Water System and Attachments) at Attachments C & D (Effluent System Treatment Process and Water Balance Diagrams). To accommodate the return of non-contact cooling water to the WWTP, the City of Mankato will amend and update its National Pollutant Discharge Elimination System (“NPDES”) renewal application, which is currently pending before the Minnesota Pollution Control Agency (“MPCA”). Testimony of J. Goodwin, July 12, 2004, at pages 96-97. The City of Mankato has agreed to facilitate the arrangement, which would allow the City to discharge the Facility’s wastewater through the City outfall and under the City NPDES Permit. Id. at 92-93.

66. The Facility will be more efficient at producing energy than other fossil-fueled generation resources in the region. Ex. 66 (M. Lacey Pre-Filed Testimony) at 20-21. If dispatched to “bump” the least efficient generation source used to meet the region’s load, the Facility will have a small incremental effect of decreasing the region’s energy costs. Id.

**B. A More Reasonable and Prudent Alternative Has Not Been Demonstrated**

67. Under Minn. R. 7849.0120(B), the record must be analyzed to determine if there is a more reasonable and prudent alternative to the Facility. The factors to be considered by the Commission in assessing alternatives are:

- B.1. the appropriateness of the size, the type, and the timing of the proposed facility compared to those of reasonable alternatives;
- B.2. the cost of the proposed facility and the cost of energy to be supplied by the proposed facility compared to the costs of reasonable alternatives and the cost of energy that would be supplied by reasonable alternatives;
- B.3. the effects of the proposed facility upon the natural and socioeconomic environments compared to the effects of reasonable alternatives;
- B.4. the expected reliability of the proposed facility compared to the expected reliability of reasonable alternatives.

68. A detailed screening process was employed by Mankato Energy to properly identify high quality sites most appropriate for location of a power generating facility. Ex. 50 (J. Goodwin Pre-Filed Testimony) at 7-9. As a result of the screening process, four potential sites were identified, from which the final site was chosen as the most suitable location for the Facility. Id.; Ex. 50 (J. Goodwin Pre-Filed Testimony) at JMG-2 (Alternative Sites Map).

69. Alternatives to the Facility were evaluated to determine the compatibility of other means of satisfying an energy need that (1) fits within the boundaries of the site selected by Mankato Energy for the statutorily exempt portion of the Facility, (2) comports with the business model of Mankato Energy, (3) is cost-effective when compared to the portion of the Facility that is the subject of the CON application, and (4) is commercially proven. Ex. 1 (CON Application) at 5-1.

70. These four objectives were chosen in part to take advantage of the construction and operational efficiencies inherent in “adding on” to the PUC-approved exempt capacity for obligations under the PPA. Ex. 1 (CON Application) at 5-9 to 5-10. If Mankato Energy were to only build the configuration needed to meet PPA obligations, the efficiencies of building the other portion of the power plant would be lost, and the energy needs of the area would have to be met with other generation. Id. Such additional generation is likely to cost more due to the fact that the incremental cost to construct a larger facility at Mankato Energy is lower than would be the case at another greenfield site. Id. This is mainly due to the fact that much of the infrastructure needed for a new facility is already in place. Id.

71. The objective of locating generating capacity that is the subject of the CON application on the same site of the statutorily-exempt generating capacity is based on a desire to achieve operational efficiencies and to conserve resources. Ex. 1 (CON Application) at 5-1 to 5-2.

72. The objective of selecting a project that comports with the business model of Calpine is geared primarily toward the selection of the mode of generation. Calpine is a leading producer of combined-cycle natural gas fired electric generation in the United States. It is also the world's largest generator of geothermal power. Calpine has not developed, constructed, or operated a coal-fired power plant, a power plant that operates only on fuel oil, or wind or solar facilities. Further, Calpine has not advocated, organized, or otherwise promoted customer-owned distributed generation or demand side management. Ex. 1 (CON Application) at 5-1.

73. The objective of developing and operating generating sources that are cost-effective and use proven technology is more important to an IPP like Calpine than it might be to a regulated utility or municipal entity. Ex. 1 (CON Application) at 5-1. A regulated utility may be statutorily required to diversify their generating portfolios into promising directions that might not currently be cost-effective without subsidies or that might not yet be proven on a large-scale. Id. Calpine's business model, on the other hand, requires it to focus on the present state of available alternatives in determining the technology that will be employed at any particular generating facility. Id. Nonetheless, Calpine is continuously reviewing its business model in a manner that is similar to the alternatives analysis conducted in this proceeding with the expectation that one or more of the technologies discussed may be the economically and environmentally preferred technology of choice in the future. Id.

74. As an IPP, Calpine is a non-regulated utility that produces electrical power for sale to either regulated utilities or to the wholesale market. Unlike a regulated utility, an IPP has neither assigned services area nor obligations under Minnesota statutes to submit a Resource Plan for approval, consider supply options, or operate conservation programs. Ex. 40 (J. Shield Pre-Filed Testimony) at 4. The PUC has recognized the distinct position of IPPs by exempting them from certain analyses required for a CON application under Minn. R. Ch. 7849. Id. As the PUC has previously explained, the CON procedures were enacted when power plants were built only by regulated utilities with corresponding duties to the public to supply adequate, safe, and affordable power. Id. As evidenced by the filing exemptions granted by the PUC's February 6, 2004, order, the CON review process may be modified to account for a generation facility constructed by a non-regulated utility that produces electricity to be sold to the wholesale market and that is answerable to shareholders rather than utility ratepayers. Id.; Ex. 66 (M. Lacey Pre-filed Testimony) at 10-11.

75. The objective of commercial feasibility is an important consideration in selling generated power to wholesale customers that rely on guarantees of long-term reliability and cost-effectiveness. Ex. 1 (CON Application) at 5-2; Ex. 40 (J. Shield Pre-Filed Testimony) at 4. Calpine is generally not able to pass cost overruns to its customers – these costs and associated risk must be borne by Calpine and its shareholders. Ex. 40 (J. Shield Pre-Filed Testimony) at 4; Ex. 66 (M. Lacey Pre-Filed Testimony) at 10. However, to the extent that the Calpine facility “soaks up” need for capacity or energy so that alternative facilities are not built, then distribution utilities (and their rate payers) may be forced to purchase from Calpine regardless of the cost.

***B.1. The appropriateness of the size, the type, and the timing of the proposed facility compared to those of reasonable alternatives.***

76. Due to its IPP status, the Facility as proposed by Calpine was exempted from certain alternatives analysis otherwise required by Minn. R. 7849.0250(B). Ex. 44 (2/6/04 PUC Order). Ex. 66 (M. Lacey Pre-Filed Testimony) at 33. Specifically, Calpine did not have to

consider the following three alternatives: (1) purchased power; (2) increased efficiency of existing lines, including transmission lines; or (3) new transmission lines. Id.

77. In addition to the renewable resource and emerging-technology alternatives discussed below (see Section B.5 below), the alternatives examined by the Applicant pursuant to Minn. R. 7849.0250(B) included the following non-renewable alternatives:

- a) Coal Alternative;
- b) Oil-Fired Combustion Turbine Alternative;
- c) Simple-Cycle Combustion Turbine Alternative;
- d) Alternative of Customer-Owned Distributed Generation; and
- e) Demand Side Management Alternative.

78. All three of the fossil-fuel alternatives to the Facility would be capable of producing the necessary capacity, and therefore pass the “size” criterion. Ex. 66 (M. Lacey Pre-Filed Testimony) at 34.

79. The combined cycle design of the Facility allows for a wide operating range over long or short periods of time. Any alternative to the Facility must have this same capability. Ex. 66 (M. Lacey Pre-Filed Testimony) at 34. A simple cycle combustion turbine is not appropriate for supplying longer-term power due to its high operational costs. Id. at 35. Thus, the simple cycle alternative fails the “type” criterion. Id.

80. A coal-fired facility provides baseload power. Coal plants are unable to quickly and continuously change generation output to meet fluctuating customer load levels. Ex. 66 (M. Lacey Pre-Filed Testimony) at 34. Therefore, a coal facility also fails the “type” criterion. Id.

81. An oil-fired combined cycle alternative would be capable of producing both longer-term and peaking capacity and could do so with relatively reasonable costs. Ex. 66 (M. Lacey Pre-Filed Testimony) at 35. As a result, the oil-fired combined cycle alternative meets the “type” criterion. Id.

82. Mankato Energy expects that construction of the Facility would begin in the second half of 2004, and be operational by June 2006. Assuming an in-service of summer 2006, neither a coal-fired facility nor a combined cycle oil-fired alternative would meet the “timing” criterion. Ex. 66 (M. Lacey Pre-Filed Testimony) at 35-36. If, however, the Facility (either the first portion or the second portion or both) were not constructed until 2009, both the coal-fired and oil-fired alternatives could possibly meet the “timing” criterion.” Id.

83. Neither Mankato Energy nor Calpine has developed, constructed, owned or operated a coal-fired power generating facility, and neither company has the expertise or experience to do so within the timeframe of this proceeding. Ex. 45 (K. Morton Pre-Filed Testimony) at 19. The relatively small size of the Facility site effectively precludes the use of coal technology due to the need for large areas devoted to coal handling and storage facilities. Id.; Ex. 1 (CON Application) at 5-10. Combined cycle facilities are designed to be accommodated on small parcels of land and minimize total land use requirements – an

advantage that would be lost with the use of coal-fired generating technology. Ex. 1 (CON Application) at 5-10.

84. The oil-fired combustion turbine alternative would reduce operating flexibility and be less cost-effective (in terms of both fuel costs and operating and maintenance costs. Ex. 1 (CON Application) at 5-10 to 5-11; Ex. 2 (CON Application Supplement) at 11-19; Ex. 36 (Environmental Assessment) at 46-53. The oil-fired alternative would also be more polluting than the proposed natural gas-fired Facility. Ex. 2 (CON Application Supplement) at 15-17.

85. Mankato Energy addressed the alternative of an integrated coal gasification/combined cycle ("IGCC") project that would meet the definition of the Innovative Energy Project statute, Minnesota Stat. § 216B.1694, subd. 1. Ex. 1 (CON Application) at 5-14; Ex. 66 (M. Lacey Pre-Filed Testimony) at 31. The IGCC alternative would not achieve the cost-effectiveness that is achieved by the proposed facility. *Id.* In addition, Mankato Energy is not a regulated utility and would not purchase power generated by another IPP to fulfill its objective of generating incremental power at the Mankato facility to sell to the wholesale market. Ex. 45 (K. Morton Pre-Filed Testimony) at 24. Furthermore, even if an IGCC alternative is constructed by Excelsior Energy, Inc., the Excelsior plant would fail to meet the "timing" criterion since it is not scheduled to be in service until 2010. Ex. 66 (M. Lacey Pre-Filed Testimony) at 31.

86. Mankato Energy is not in the business of advocating, organizing, or otherwise promoting customer-owned distributed generation, and it does not have the appropriate expertise to do so. Ex. 45 (K. Morton Pre-Filed Testimony) at 21. Customer-owned distributed generation would require acquisition of many sites throughout Minnesota to generate the same amount of power as will be generated from the Facility and would not meet Project objectives. Ex. 1 (CON Application) at 5-12.

87. As an independent power provider, Calpine is not well-positioned to encourage demand side management. Ex. 1 (CON Application) at 5-12 to 5-13; Ex. 45 (K. Morton Pre-Filed Testimony) at 21. The PUC recognized that different considerations apply in the wholesale context and exempted Calpine from conservation alternatives analysis. Ex. 1 (CON Application) at 1-4.

***B.2. The cost of the proposed facility and the cost of energy to be supplied by the proposed facility compared to the costs of reasonable alternatives and the cost of energy that would be supplied by reasonable alternatives.***

88. The combined capacity and energy costs of the proposed natural gas-fired combined cycle facility are lower than any of the other fossil fuel alternatives. Ex. 1 (CON Application) at 5-10 to 5-11; 5-16 to 5-17; Ex. 36 (Environmental Assessment) at 53 (Fuel Oil Analysis).

89. A smaller combustion turbine (or single turbine) would have increased energy unit costs because the capital cost per unit of capacity generally increases as the total turbine size decreases. A simple cycle combustion turbine alternative is significantly less efficient than a combined cycle facility, resulting in more fuel use for the same amount of electric power, more emissions per amount of power produced, and a higher cost of power. Ex. 1 (CON Application) at 5-16 to 5-17; 5-10 to 5-11. Accordingly, the Facility is expected to be more cost effective than a smaller plant. *Id.*; (CON Supplemental Application) at 19-26; Ex. 36 (Environmental Assessment) at 61.



90. The cost of using distributed generation to replace the capacity of the Facility would be greatly more expensive both in terms of capital costs (dollars per MW, including site infrastructure) and operating costs (Btu/KWh). Ex. 45 (K. Morton Pre-Filed Testimony) at 21-22. In addition, air emissions from a comparative amount of distributed generation would likely be higher than at the Facility due to less strict emission requirements for small generating facilities. Id. at 21; Ex. 1 (CON Application) at 5-12.

91. Analysis of the cost of the energy supplied by the proposed facility compared to reasonable alternatives necessarily involves assessing long-term fuel costs. Natural gas commodity costs will rise and fall and any price should be viewed only as an estimate indicative of a possible range of costs. Ex. 67 (S. Shah Pre-Filed Testimony) at 8. However, forecasts generally indicate that long-term natural gas prices will be lower than they are today, even when the anticipated growth in demand from the power generation sector is taken into account. Ex. 2 (CON Application Supplement) at 5-9; Ex. 49 (J. Rosenkranz Pre-Filed Testimony) at 9. The DOC did not dispute Mankato Energy's estimated natural gas cost figures. Ex. 67 (S. Shah Pre-Filed Testimony) at 7.

92. Minnesota's location on or adjacent to several major natural gas pipeline systems creates high integration with the larger national or continental natural gas market; high integration means that Minnesota gas prices are largely determined by forces outside the state. Ex. 49 (J. Rosenkranz Pre-Filed Testimony) at 9; Ex. 67 (S. Shah Pre-Filed Testimony) at 15. Even if the cost of natural gas did rise, the Facility's high efficiency and the likely cost of natural gas relative to other fossil fuels would support the cost-effectiveness of the Facility. Ex. 49 (J. Rosenkranz Pre-Filed Testimony) at 9.

93. If natural gas prices rise to a point where it is no longer economical to use natural gas to generate electricity based on the price received for electricity, the Facility could switch to alternate fuels such as No. 2 fuel oil to generate electricity. Ex. 67 (S. Shah Pre-Filed Testimony) at 15. With modifications, the Facility is also capable of using other fuels such as biodiesel, ethanol, methanol, hydrogen, and blended gases. Ex. 45 (K. Morton Pre-Filed Testimony) at 30.

94. Mankato Energy calculated its consumption rates and the rates of other natural gas electric generation facilities in Minnesota and presented them in Exhibit JAR-4, entitled "Potential Electric Generation Share of the Minnesota Gas Market." Ex. 49 (J. Rosenkranz Pre-Filed Testimony) at 3-5, JAR-4. Ex. JAR-4 provides an illustration of the Facility's potential gas use and a conservative presentation of what the potential maximum impact could be on the total natural gas use in the state. Id.; Testimony of J. Rosenkranz, July 12, 2004, at page 57. By design, the gas consumption estimates presented in Exhibit JAR-4 overstate the effects that constructing additional combined-cycle generating plants will have on natural gas used in the state. Ex. 49 (J. Rosenkranz Pre-Filed Testimony) at 11; Testimony of J. Rosenkranz, July 12, 2004, at page 57.

95. The gas consumption numbers presented in Exhibit JAR-4 are independent estimates developed for each plant. Ex. 49 (J. Rosenkranz Pre-Filed Testimony) at 11. Where possible, estimates filed by project sponsors in regulatory proceedings were used. Id. In those cases where a range of gas use estimates was provided, the high-end number was used to create a conservative estimate of the gas market impact. Id. However, summing individual plant estimates does not consider the way that plants will actually be dispatched on the electric grid. Id. at 11-12. Generation estimates by project sponsors do not always take into account proposed facilities that may be constructed at a later date. Id. at 12. Also, the addition of new

combined-cycle plants is likely to displace power that would otherwise be generated by the less efficient gas-fired peaking plants. Id. Because simple-cycle plants consume approximately 40 percent more fuel than a combined-cycle plant for each kilowatt-hour generated, the substitution of power from combined-cycle plants for power from simple-cycle plants will reduce natural gas use. Id.; Ex. 45 (K. Morton Pre-Filed Testimony) at 25. Finally, the use of average daily consumption numbers does not account for the fact that gas use in the power generation sector should continue to be higher in the summer months, when gas demand in the residential and commercial sectors is low. Ex. 49 (J. Rosenkranz Pre-Filed Testimony) at 12. The peak month for gas consumption is in the winter, while the peak month for electric consumption is in the summer. Although this seasonality does not change the total quantity of gas used for power generation, it does lessen the potential impact on other gas users, including residential customers who depend on natural gas for winter heating.

96. The analysis shown in Exhibit JAR-4 suggests the cumulative impact of the Facility and other natural gas generation facilities that have either been approved or are currently under state regulatory review, could potentially put natural gas at an 18 percent share of the gas consumed in the state – below the 22 percent national average. Ex. 49 (J. Rosenkranz Pre-Filed Testimony) at 10, JAR-4. This analysis provides a useful upper range of the Facility's impact and is not meant as a precise estimate of future natural gas consumption. Testimony of J. Rosenkranz, July 12, 2004, at pages 63-64. Indeed, the numbers used to generate the percentage share are conservative, which would have the effect of revising the percentage downward. Id. at 57.

97. The combined capacity of the five interstate pipelines that transport natural gas into Minnesota is nearly nine times the state's average daily gas use. Ex. 49 (J. Rosenkranz Pre-Filed Testimony) at 11, JAR-2. When measured relative to the supply of gas, the maximum potential natural gas use of the non-exempt portion of the Facility is only about one-half of one percent of the estimated capacity of the pipelines that currently transport natural gas into Minnesota, while the potential consumption of the entire Facility is just over one percent of the available supply. Ex. 49 (J. Rosenkranz Pre-Filed Testimony) at 4. The Facility is not expected to significantly affect the cost or availability of natural gas to other natural gas customers. Ex. 2 (CON Application Supplement) at 5-9; Ex. 49 (J. Rosenkranz Pre-Filed Testimony) at 8-11; Ex. 67 (S. Shah Pre-Filed Testimony) at 15-16.

98. With respect to the effects of the Facility on natural gas use in Minnesota, there are no negative impacts on natural gas supply reliability. Ex. 67 (S. Shah Pre-Filed Testimony) at 16. Indeed, it may actually increase the reliability of natural gas delivery service by triggering an expansion of NNG's mainline capacity. Id.

99. The planned secondary fuel for the Facility is low sulfur distillate oil. The back-up fuel provides fuel during periods when natural gas is not available and the Facility must generate and supply electricity to the grid. An analysis of biodiesel, biomass, and ethanol compared to low sulfur distillate oil indicates the latter is appropriate for use at the Facility. Ex. 36 (Environmental Assessment) at 42-45. It is possible, although not practical at this time, that other fuels such as hydrogen, methanol, propane, and blended gases could be used as fuels for the Facility with proper modifications or equipment enhancements. Ex. 45 (K. Morton Pre-Filed Testimony) at 30-34. The processes to convert biomass to fuel, especially on a large scale as would be required at the Facility, have not yet been proven to be commercially feasible. Ex. 36 (Environmental Assessment) at 44. While operation of the combustion turbine using ethanol is technically feasible, the manufacturer of the Facility's turbines has no experience with operation of the equipment using ethanol or an ethanol blend and the turbines would have to be modified

in order to meet performance standards. Ex. 36 (Environmental Assessment) at 45. The same is true for methanol and methanol blends. Ex. 45 (K. Morton Pre-Filed Testimony) at 34. Use of hydrogen in combustion turbines is limited by its availability in large production quantities, cost, and difficulty in transportation. Id. at 32. Use of propane is not preferred due to the lack of widespread distribution systems (thus its need to be transported by truck rather than pipeline) and safety factors. Id. at 31. While it is possible to use blended gases in the equipment proposed by Mankato Energy, the practicality of delivery prohibits their use in this case. Id. The Facility site is not located adjacent to or nearby any processing plant whose by-products include high-energy waste gases. Id. at 32.

100. The Minnesota Project and the Minnesota Soybean Growers Association (“MSGA”) submitted post-hearing comments wherein they contended that biodiesel (particularly biodiesel blends) are a viable alternative back-up fuel. See July 22, 2004, comment letter from MSGA, and July 23, 2004, comment letter from the Minnesota Project. As with other alternative fuels, biodiesel may emerge in the future as a viable and economical alternative for the Facility. K. Morton Testimony, July 12, 2004, at page 44. Currently, the primary drawbacks to increased use of biodiesel are the higher fuel cost compared to petroleum diesel and the availability of fuel in practical, sufficient quantities to use in the Facility. Ex. 36 (Environmental Assessment) at 43. In addition, biodiesel has not been proven for use in combustion turbines of the kind proposed for the Facility (although there do not appear to be any technical reasons that biodiesel could not be used in blended form in combustion turbine applications). Ex. 45. (K. Morton Pre-Filed Testimony) at 33. The only types of biodiesel testing performed to date on combustion turbines have been done on a tabletop scale. Testimony of K. Morton, July 12, 2004, at pages 44, 47-48. Furthermore, according to the National Biodiesel Board, it is not recommended to store pure biodiesel fuel for periods more than six months. Ex. 36 (Environmental Assessment) at 43. Were biodiesel only to be used as a back-up fuel, this limitation could result in wasted fuel if it is not used with sufficient frequency. Id. Based on information currently available about biodiesel, the DOC could not conclude that a biodiesel backup fuel alternative is less expensive than the petroleum diesel alternative proposed by Mankato Energy. Ex. 66 (M. Lacey Pre-Filed Testimony) at 30. But many of the concerns noted above diminish as the percentage of biodiesel to regular fuel reduces in a blend. For example, the Soybean Growers Association notes that the cost difference is much more substantial when comparing 100% biodiesel with 100% petroleum. Biodiesel diesel is in the range of \$1.00 per gallon more expensive than petroleum diesel. But B2 (which is 2% biodiesel) should cost only 2¢ per gallon more, which is a small cost difference for a project of this magnitude. Given the various uncertainties with biodiesel, its advocates are suggesting that Calpine start with a low percentage blend, such as B2 or B5. Calpine’s apparent response is that until the uncertainties are resolved, it does not want to experiment.

***B.3. The effects of the proposed facility upon the natural and socioeconomic environments compared to the effects of reasonable alternatives.***

101. The environmental concerns associated with a coal facility are greater than with a natural gas-fired facility. For instance, coal plants emit significantly higher sulfur dioxide, particulate, and mercury emissions, Ex. 1 (CON Application) at 5-10; Ex. 45 (K. Morton Pre-Filed Testimony) at KJM-8, as well as noise and other impacts associated with the coal delivery and handling facilities (including rail traffic to bring the coal to the plant), and potential cost implications that may arise from future environmental regulations such as carbon dioxide monetization. Ex. 1 (CON Application) at 5-10.

102. On May 7, 2004, Calpine announced that the company plans to address global warming issues by voluntarily limiting the company's investments to only low carbon power generation. This announcement, which accompanied a Board of Director's Resolution, effectively precludes Calpine's investment in any current coal-fired technologies. Ex. 45 (K. Morton Pre-Filed Testimony) at 20.

103. The oil-fired combustion turbine alternative would increase environmental impacts compared to the proposed natural gas Facility. Ex. 1 (CON Application) at 5-10 to 5-11; Ex. 2 (CON Application Supplement) at 11-19; Ex. 36 (Environmental Assessment) at 46-53. For example, emissions of sulfur dioxide, carbon monoxide, nitrogen oxides, particulate matter, and trace element concentrations would all be greater. Ex. 36 (Environmental Assessment) at 49-50; Ex. 66 (M. Lacey Pre-Filed Testimony) at 42. Water use would also be greater, and land use requirements also would be greater due to the need for large quantities of on-site oil storage capacity needed to support continuous operation. Ex. 1 (CON Application) at 5-1 to 5-11; Ex. 2 (CON Application Supplement) at 11-19; Ex. 36 (Environmental Assessment) at 51.

104. The environmental impacts associated with distributed generation, assuming fossil fuel based power, are greater than the impacts potentially associated with the Facility. Ex. 45 (K. Morton Pre-Filed Testimony) at 21-22. This is due to the fact that the small size of the distributed generation facilities allows them to escape more stringent air emission requirements associated with a larger facility. Id.

105. Air pollutant emissions from combustion turbines are dependent upon many factors such as type of fuel, ambient temperatures, and turbine loads. Ex. 13 (Site Permit Application) at 10-2; Ex. 50 (J. Goodwin Pre-Filed Testimony) at 18-20. It is anticipated that emissions from the combustion turbine proposed for this location will be controlled to the best available control technology ("BACT") limits with internal design, add-on controls, and use of clean fuels to reduce the emissions of regulated pollutants. Id. Natural gas alternatives generally emit fewer pollutants than either coal or oil-fired alternatives, per kilowatt hour. Id.; Ex. 36 (Environmental Assessment) 49-51. Add-on controls such as Selective Catalytic Reduction allow the Facility to emit fewer pollutants than simple cycle alternatives. Ex. 45 (K. Morton Pre-Filed Testimony) at 38; Ex. 2 (CON Application Supplement) at 22. Also, the Applicant will apply for an air permit that will place limits on the hours per year that fuel oil and natural gas can be burned. Emissions will result in ambient impacts that represent only minor fractions of the applicable air quality standards and, therefore, will not adversely impact public health and safety, plants, animals, or soils. Ex. 13 (Site Permit Application) at 10-2.

106. The Facility will not have significant adverse impact on water resources. The Facility will comply with all applicable stormwater and wastewater discharge requirements. Ex. 13 (Site Permit Application) at 8-8 to 8-10. The raw water supply source will be treated wastewater effluent or "gray water" from the City of Mankato WWTP. Id. at 2-12 to 2-13, and 3-4. Once used by the Facility, this water will be pre-treated and returned directly to the WWTP. Testimony of J. Goodwin, July 12, 2004, at pages 91-97. See Ex. 57 (MEC Cooling Water System and Attachments) at Attachments C & D (Effluent System Treatment Process and Water Balance Diagrams).

107. To accommodate the return of non-contact cooling water to the WWTP, the City of Mankato will amend and update their NPDES permit renewal application, which is currently pending before the MPCA. Testimony of J. Goodwin, July 12, 2004, at pages 96-97. The City of Mankato has agreed to facilitate the arrangement, which would allow the City to discharge the Facility's wastewater through the City outfall and under the City NPDES Permit. Id. at 92-93.

108. Stormwater runoff will be managed using best management practices in accordance with a Storm Water Pollution Prevention Plan under the Minnesota NPDES General Stormwater Discharge Permit for Industrial Activities. Ex. 13 (Site Permit Application) at 8-8 to 8-10. The absence of onsite storage of alternative fossil-fuels, among other factors, will lead to fewer stormwater impacts at the Facility than would occur at an oil or coal-fired facility. Id.

109. Additional analysis of environmental impact of available alternatives was performed pursuant to the Site Permit application process. (See EQB Site Permit discussion below.)

110. The Facility will benefit the local and regional communities as well as the State of Minnesota. Ex. 36 (Environmental Assessment) at 74; Ex. 1 (CON Application) at 4-1; Ex. 45 (K. Morton Pre-Filed Testimony) at 35. The Facility will utilize natural gas, a clean-burning fossil fuel, and a highly efficient combustion technology to generate reliable electricity while minimizing human and environmental impacts. Ex. 1 (CON Application) at 4-1. The Facility has been carefully sited close to a major natural gas pipeline and the high voltage transmission system minimizing impacts associated with infrastructure connections. Id.

111. A number of benefits to the immediate area and beyond have been identified, including temporary and permanent job creation, additional property tax revenues directly attributable to the Facility, and the addition of clean, efficient, and reliable generating capacity to the regional electric supply system. Ex. 1 (CON Application) at 4-1 to 4-3; Ex. 36 (Environmental Assessment) at 74.

112. The estimated construction work force needed for construction of the project will include high-skilled, high-paying jobs such as welder, pipe fitter, boilermaker, and insulator, as well as carpenter, electrician and other trades. Construction of the Facility is estimated to cost \$240 million with an estimated \$50 million in local expenditures and 450 temporary jobs during the estimated 20-month initial construction phase of the Facility. Ex. 36 (Environmental Assessment) at 74; Ex. 1 (CON Application) 4-1 to 4-3; Ex. 45 (K. Morton Pre-Filed Testimony) at 35. Mankato Energy expects that it will hire about 22 full-time employees to operate the Facility, which will result in additional tax revenues paid to the State of Minnesota and Blue Earth County, including an estimated \$400,000 per year in property taxes. Id.

#### ***B.4 The expected reliability of the proposed facility compared to the expected reliability of reasonable alternatives.***

113. The Facility is expected to have an annual availability factor greater than 90 percent. Ex. 45 (K. Morton Pre-Filed Testimony) at 11. The conventional simple-cycle alternative and oil-fired combined cycle are expected to have similar availability factors, while baseload coal would range from 85 to 87 percent. Id. at 12. Ex. 8 (Response to DOC Information Request No. 45). Given the Facility's expected operation, the estimated reliability is reasonable compared to the available alternatives. Id.; Ex. 66 (M. Lacey Pre-filed Testimony) at 45.

114. At times when the Facility is not operating, or when it is operating at less than full output, and additional power must be delivered into the grid, the combined cycle plant is able to meet the demand much more quickly than a coal-fired plant. Ex. 2 (CON Application Supplement) at 29-30; Ex. 45 (K. Morton Pre-Filed Testimony) at 28. This ability helps to maintain system reliability in general and is especially important in areas where wind energy constitutes a significant portion of the region's energy mix. Id.

115. Although some traditional gas-producing regions are maturing, the natural gas industry continues to be successful in converting potential gas resources into proven reserves. As seen in Ex. 49 (J. Rosenkranz Pre-Filed Testimony) at JAR-1, proved reserves in the United States actually increased over the last decade. Efforts are currently underway to increase production from areas with high growth potential such as the Rocky Mountain regions and the Deepwater Gulf Coast, and to develop known reserves in Canadian frontier regions between now and 2010. Id. at 7. Although less certain as to timing, a new pipeline from Alaska is also being planned. Id. Further, production from non-conventional gas resources (tight formations, shale, and coal seams) should be sufficient to maintain North American gas production at current levels in addition to increased resources through international liquefied natural gas (“LNG”) trade. Ex. 49 (J. Rosenkranz Pre-Filed Testimony) at 8. Natural gas availability, as projected by the Energy Information Administration (“EIA”) 2004 Annual Energy Outlook, indicates there will be reliable access to natural gas supplies. Ex. 2 (CON Application Supplement) at 5-6.

116. As discussed above, maximum natural gas consumption by the non-exempt portion of the Facility may be as high as one-half of one percent of the estimated capacity of the pipelines that currently transport natural gas into Minnesota, while the potential consumption of the entire Facility is just over one percent of the available supply. Ex. 49 (J. Rosenkranz Pre-Filed Testimony) at 4. At such a rate, when compared with the annual interstate pipeline deliveries to Minnesota natural gas utilities of 350,706,180 Mcf in 2002, the Facility could result in approximately a 3.28 percent increase in natural gas usage in the state. Ex. 67 (S. Shah Pre-Filed Testimony) at 14. With respect to the effects of the proposed facility on natural gas use in Minnesota, there appear to be no negative impacts on natural gas supply reliability. Id. at 16. In fact, it may actually increase the reliability of the natural gas delivery service by expanding NNG’s mainline capacity. Id.

117. It is anticipated that the transportation arrangements with NNG will include an expansion of NNG’s mainline capacity immediately upstream of Mankato to provide for firm transportation of natural gas from the Northern Border interconnect at Welcome, Minnesota, to the Facility. Ex. 4 (Response to DOC Information Requests 1-39) at 13 (Request No. 6). This expansion will allow NNG to supply the Facility incremental quantity of natural gas while not reducing its existing capacity in Minnesota. Id. Any delivery of non-firm gas to the Facility by NNG will be subject to NNG’s scheduling procedures, which will prevent non-firm service from affecting deliveries to customers with firm transportation entitlements on the pipeline. Id.

118. The Facility has the ability to switch fuels if there are concerns about the reliability of natural gas in the event of a disruption to natural gas supplies. Ex. 67 (S. Shah Pre-Filed Testimony) at 15. Furthermore, with proper modifications or equipment enhancements, combustion turbines at the Facility may be able to burn fuels as diverse as biodiesel, ethanol, other gases such as hydrogen and propane, and blends of all of the above. Ex. 45 (K. Morton Pre-Filed Testimony) at 30-31; Ex. 36 (Environmental Assessment) at 42-43, 45.

119. Applicant’s major assumptions in providing the information for the proposed facility and its available alternatives are reasonable, including the projected escalation rates for fuel costs and operating and maintenance costs. See Ex. 2 (CON Application Supplement) at 5-9.

120. There is no reasonable and prudent alternative to the proposed facility, considering size, type, timing, cost, environmental and socioeconomic effects, and reliability of the project and the reasonable alternatives.

***B.5. There are no renewable-resource alternatives that can reasonably meet project goals.***

121. Minn. Stat. § 216B.243, subd. 3(a), establishes a two-step process for the Commission to consider regarding renewable-resource alternatives:

- (1) the applicant must explore the possibility of generating power by means of renewable energy resources; and
- (2) the applicant must demonstrate that the alternative selected is less expensive (including environmental costs) than power generated by a renewable energy source.

Unless the renewable generation resource can meet the project goals of the proposed generation facility, a detailed cost-analysis is not performed. Ex. 66 (M. Lacey Pre-Filed Testimony) at page 21.

122. For purposes of Minn. Stat. § 216B.243, subd. 3(a), hydropower, wind, solar, geothermal and biomass are considered renewable energy resources. Ex. 66 (M. Lacey Pre-Filed Testimony) at 22.

123. The Department concluded that Mankato Energy explored renewable options and that no renewable resource could reasonably meet the project objectives which include:

- a) Applicability – the alternative can meet Mankato Energy's desire to make capacity and energy available to the wholesale market within Minnesota and the greater MAPP region;
- b) Availability – the alternative can provide a commercially proven facility at the several-hundred MW scale at any point between the 2006 summer season and the end of 2009;
- c) Reliability – the alternative enhances the reliability of the bulk electric system;
- d) Environmental Impacts – the alternative minimizes environmental and community impacts;
- e) Cost and Economic Effects – the alternative implements the least cost alternative and provides economic benefits to the community.

Ex. 66 (M. Lacey Pre-Filed Testimony) at 22-30.

124. While no renewable alternative can reasonably meet project objectives, the Applicant nonetheless undertook a general cost analysis of the renewable alternatives. Ex. 1 (CON Application) at 5-13 to 5-14. The renewable alternatives analysis is premised on using the proposed site to build the exempt portion of facility and provide the exempt portion of the power. Id.

125. Wind energy is low cost and is perceived to have unlimited supply. Wind turbines are increasingly reliable and the costs of wind generation are decreasing. However, wind generation alone is not an effective resource to meet intermediate resource needs

because the wind does not blow continually and there is a low correlation between wind output and summer peaking conditions. Ex. 1 (CON Application) at 5-13; Ex. 2 (CON Application Supplement) at 28-30.

126. Assuming a capacity factor of 20 percent for wind, it would take approximately 1,775 MW of installed wind capacity to equal the output of the Facility. Ex. 66 (M. Lacey Pre-Filed Testimony) at 26. Minnesota currently has 562.7 MW of wind capacity. Id. There is virtually no chance for the development of more than three times current wind capacity within the next two years. Id. Thus, wind fails to meet the project criteria. Id.

127. The relatively small size of the Facility site effectively precludes the use of wind technology due to the need for large spaces between the windmills. Ex. 1 (CON Application) at 5-13. The lack of space would preclude installation of any significant wind generating capacity at the site. Id. In addition, despite recent improvements to increase the reliability and decrease the costs associated with wind power, these measures both fall short of the reliability and cost associated with the generation that is the subject of the CON Application. Id.

128. To obtain more wind generation, the State of Minnesota also needs resources like the proposed facility that can provide the means to effectively incorporate those intermittent resources into the generation mix so that the electric system as a whole remains reliable and secure at a reasonable cost. Ex. 36 (Environmental Assessment) at 40.

129. Mankato Energy performed an analysis of a “wind-gas alternative” in its CON Application Supplement. Ex. 2 (CON Application Supplement) at 28-30. The study states that a significantly smaller facility would effectively waste the potential cost-savings and operational efficiencies provided by the expansion of the Facility beyond the Xcel Energy PPA requirements. Id. Neither Mankato Energy nor Calpine has ever constructed or operated any wind generation facilities. Ex. 66 (M. Lacey Pre-Filed Testimony) at 27. As a practical matter, Mankato Energy would have to pursue a wind-gas alternative through a power purchase agreement between the Facility and a wind developer, and then resell the power to a retail provider. Id. In order to cover its transaction costs, the Facility would need to raise the price of wind energy it purchased. Id. at 27-28. Therefore, it would be cheaper and more efficient for a retail electric provider to purchase wind energy directly from a wind generator. Id.

130. However, a combined cycle plant can “follow” wind generation by ramping up and down quickly. Ex. 2 (CON Application Supplement) at 28-30. When the wind is blowing hard, the combined cycle plant can be ramped down; when the wind is not blowing or is blowing too softly to turn the wind turbines, the combined cycle plant can be ramped up. Id. Coal and nuclear plants cannot match this ability. Id. Simple cycle plants cannot do it as efficiently or with as few air emission impacts. Ex. 1 (CON Application) at 5-11 to 5-12.

131. The ability of a combined cycle plant to operate as a complement to wind generation is due to the fact that a combined cycle plant easily supplies what are referred to as “ancillary services.” Ex. 45 (K. Morton Pre-Filed Testimony) at 28. These services include: frequency regulation, load following via automatic generation control for second-to-second, minute-to-minute, and hour-to-hour load fluctuations, spinning reserve, supplemental reserve, and voltage regulation and VAR dispatch. Id. A description of these ancillary services and their interplay with wind generation is provided in the report included in Ex. 45 (K. Morton Pre-Filed Testimony) at KJM-7. That report discusses the need for such ancillary services (both for reliability and security) as more wind generation is brought into the system mix, and concludes that combined cycle generation is uniquely qualified to provide those services so as to allow for



effective and efficient management of the generation system. Id. See also Ex. 4 (Response to DOC Information Requests 1-39) at Response 30.

132. The impacts associated with the wind-gas alternative that includes the non-exempt portion of the Facility would be greater than those impacts associated with the proposed Project. Ex. 2 (CON Application Supplement) at 29. The exempt portion of the project would be part of the overall wind-gas alternative. Id. The incremental costs of adding capacity to the exempt portion would be less than the impacts associated with the wind portion of the alternative – land use impacts, noise impacts, visual impacts, impacts on birds, etc. Id.

133. Solar energy is another intermittent resource. There is less experience with solar generation in the region than with wind. The relatively small size of the Facility site effectively precludes the use of solar technology due to the need for large amounts of space for the solar panels. The lack of space would preclude installation of any significant solar generating capacity at the site. In addition, the cost and reliability of solar power does not compare favorably with the generating capacity offered by the Facility. Also, northern latitudes do not provide the necessary amount and intensity of solar energy required to make solar generation a feasible option. Ex. 1 (CON Application) at 5-13. Because of its intermittent nature, the solar alternative fails the applicability criterion. Ex. 66 (M. Lacey Pre-Filed Testimony) at 26.

134. Hydropower fails to meet reasonable project criteria. Because of the long lead time for construction of a hydropower facility, a hydro alternative fails the availability test. Ex. 66 (M. Lacey Pre-Filed Testimony) at 24-25.

135. The relatively small size of the Facility site would preclude siting a biomass plant that would have the same generating capacity as the proposal that is the subject of this Application. Ex. 1 (CON Application) at 5-14. A biomass plant would be more expensive to build and operate than the proposed generating capacity. Id. In addition, the environmental impacts of such a facility would be greater (due to both the facility itself and the machinery and equipment needed to gather and transport the biomass fuel) than the proposed generating capacity. Id. It is unlikely a biomass alternative could be built by 2006, thus failing the project availability objective. Ex. 66 (M. Lacey Pre-Filed Testimony) at 27.

136. At this time, there are no known geothermal sites in the region. Ex. 66 (M. Lacey Pre-Filed Testimony) at 26. Therefore, the geothermal alternative fails the availability criterion. Id.

137. The use of biodiesel fuel either as a primary or back-up fuel supply has not yet been proven to work in combustion turbines of the size or type proposed by Mankato Energy. Ex. 45. (K. Morton Pre-Filed Testimony) at 33; Testimony of K. Morton, July 12, 2004, at pages 44, 47-48. Thus this option fails both the availability and reliability criteria. It is likely, however, that a biodiesel blend would prove workable as a back-up fuel supply, albeit at a slightly higher cost than 100% petroleum. See Finding 100, above.

138. Mankato Energy examined other alternatives to the Facility, including emerging technologies such as microturbines, battery energy storage, pumped storage, compressed air, and superconducting magnets. Ex. 1 (CON Application) at 5-14 to 5-15. None of the alternatives is appropriate to meet the project objectives because they are not commercially available on the scale of the project, they would not be cost-effective, or suitable sites are not available. Id. The proposed project is less expensive, including environmental costs, than power generated by reasonably available renewable energy sources. Id.

139. If a renewable-resource alternative cannot meet the goals of the proposed facility, there is no merit in determining whether the renewable resource is capable of producing electricity at a lower cost. Ex. 66 (M. Lacey Pre-Filed Testimony) at 21-22. Mankato Energy concluded that no renewable alternative clearly supports all project goals. *Id.* at 23; Ex. 1 (CON Application) at 5-13 to 5-16. The DOC agreed that requiring the Facility to provide a cost analysis of renewable alternatives to its proposed project would be unduly burdensome and unreasonable in this particular case. Ex. 66 (M. Lacey Pre-Filed Testimony) at 23.

140. Mankato Energy has demonstrated that it has explored the possibility of generating power by means of renewable energy sources and has demonstrated that the Facility is less expensive (including environmental costs) than power generated by a renewable energy source.

**C. The Proposed Facility Will Provide Benefits to Society in a Manner Compatible with Protecting the Natural and Socioeconomic Environments.**

141. Under Minn. R. 7849.0120, it must be determined whether, by a preponderance of the evidence on the record, the proposed facility, or a suitable modification of the Facility, will provide benefits to society in a manner compatible with protecting the natural and socioeconomic environments, including human health, considering:

- C.1. the relationship of the proposed facility, or a suitable modification thereof, to overall state energy needs;
- C.2. the effects of the proposed facility, or a suitable modification thereof, upon the natural and socioeconomic environments compared to the effects of not building the facility;
- C.3. the effects of the proposed facility, or a suitable modification thereof, in inducing future development; and
- C.4. the socially beneficial uses of the output of the proposed facility, or a suitable modification thereof, including its uses to protect or enhance environmental quality;

***C.1. The relationship of the proposed facility, or a suitable modification thereof, to overall state energy needs.***

142. Existing resources in the MAPP-US region cannot meet the region's projected demand. Ex. 45 (K. Morton Pre-Filed Testimony) at 14-15. The 2003 MAPP Load and Capability Report compiled the MAPP-member load forecasts, existing resource capabilities, and projected resource additions in order to calculate the regional electric generation capacity. Ex. 1 (CON Application) at 3-1 to 3-6. The report indicates that MAPP members need to build additional capacity. Increased capacity will be needed to maintain sufficient reserve levels to ensure a safe, reliable system. *Id.*; Ex. 1 (CON Application) at 3-1 to 3-6; Ex. 45 (K. Morton Pre-Filed Testimony) at 14-15.

143. Not constructing this facility is likely to reduce the reliability of the electric generation system in Minnesota because of the projected deficits in electric energy and generation capacity. Ex. 1 (CON Application) at 3-1 to 3-6; Ex. 45 (K. Morton Pre-Filed Testimony) at 15.

***C.2. The effects of the proposed facility, or a suitable modification thereof, upon the natural and socioeconomic environments compared to the effects of not building the facility.***

144. There will be a certain amount of traffic and noise impacts during construction of the Facility, and a limited amount of noise impacts and air emissions during operation. These environmental effects will be mitigated to the greatest extent reasonably available and subject to the permitting authority of various governmental agencies. Ex. 13 (Site Permit Application) at 5-1 to 5-9 (air), 4-3 (noise), 4-10 (aesthetics), and 8-7 to 8-11 (water).

145. Because the Facility will burn a fossil fuel, it will affect the natural environment. However, the proposed combined-cycle technology, relying largely on natural gas and steam to generate electricity, will make the Facility one of the most efficient fossil fuel power plants in Minnesota, with less negative impact on the natural environment than less fuel-efficient facilities. Natural gas is the cleanest fossil fuel. Ex. 45 (K. Morton Pre-Filed Testimony) at 37. A detailed comparison of the environmental impacts associated with the alternatives of an oil-fired combined cycle plant and a gas-fired simple cycle plant was provided in the Supplemental Filing. Id.; Ex. 2 (CON Application Supplement) at 12-19.

146. A comparison of the air impacts associated with a new, state-of-the-art coal-fired unit and a typical natural gas plant is provided in the table included as Exhibit KJM-8, which is part of Ex. 45 (K. Morton Pre-Filed Testimony). As demonstrated in that table, natural gas is dramatically cleaner with respect to every major regulated pollutant, and gas emits about half as much carbon dioxide as coal. Id. Natural gas is also cleaner than an IGCC plant. Ex. 46 (K. Morton Rebuttal Testimony) at KJM-9. The contrast between a coal plant and a natural gas plant is even more striking when a new gas facility is compared with an older coal plant that is not subject to modern air emissions standards. Ex. 45 (K. Morton Pre-Filed Testimony) at 37. In such a scenario, should state or federal regulators tighten standards for mercury or establish limits on carbon dioxide emissions, which many experts believe is inevitable, Minnesota consumers may be asked to fund hundreds of millions of dollars to retrofit new and existing coal plants in order to comply with these important new environmental standards. Id. This risk does not occur with respect to new investment in natural gas-fired power generation. Id. Finally, the Minnesota legislature has recognized the environmental, social, and long-term advantages of using natural gas and codified its preference for natural gas over coal and nuclear power generation. See Minn. Stat. § 216C.051, subd. 7(c)(d). Id.

147. Environmental organizations across the country, including local chapters of the American Lung Association and the Sierra Club, have supported new natural gas-fired power plants over coal as a cost-effective way to help clean the air, and as a method that is more certain and immediate than imposing expensive retrofits on older generating units. Ex. 45 (K. Morton Pre-Filed Testimony) at 38. The environmentally-friendly nature of natural gas is due in part to the significantly fewer air emissions associated with natural gas use and the impacts associated with the delivery and storage options for other types of fuels. Id.

148. Another important part of the environmental benefit inherent in the use of natural gas is its symbiotic relationship with renewable and intermittent generating resources. Ex. 45 (K. Morton Pre-Filed Testimony) at 38. As more renewable generation, particularly wind power, is installed in Minnesota, natural gas generation will be needed to successfully integrate the irregular generating nature of wind resources onto the electrical grid. Id. Natural gas units can be started and synchronized to the electric grid much faster than traditional baseload units, and, as described above, can quickly supplement intermittent wind generation to match its output to

the requirements of electricity users. *Id.* A combination of wind and natural gas generation is an ideal means to enable the state's load serving entities to reduce pollution, including the emission of carbon dioxide and other greenhouse gases. *Id.* Ideally, highly efficient combined cycle resources would be used to complement wind generation rather than peaking units that are less efficient (combined cycle units are approximately 40 percent more efficient than simple cycle units) and relatively more polluting (due to use of less fuel and the ability to add additional emission control equipment such as Selective Catalytic Reduction systems). *Id.*

149. The socioeconomic environment will benefit from the estimated \$240 million in construction costs, an estimated \$50 million in local expenditures and 450 temporary jobs during the approximate 20-month construction phase of the Facility. Ex. 36 (Environmental Assessment) at 74; Ex. 1 (CON Application) at 4-1 to 4-3. The Facility will add approximately 22 full-time jobs to the local economy and increase the local tax base over the life the Facility. Ex. 1 (CON Application) at 4-1 to 4-3. A number of indirect and induced jobs will also be created. *Id.* See Site Permit Analysis below for further discussion of socioeconomic benefits.

***C.3. The effects of the proposed facility, or a suitable modification thereof, in inducing future development.***

150. Although the Facility is not expected to significantly impact the immediate area in terms of generating future development, increasing the supply of efficient electrical power will enable the region and state to meet future energy needs and help sustain economic growth associated with additional industrial, commercial, and residential development. Ex. 1 (CON Application) at 4-3; Ex. 36 (Environmental Assessment) at 74-75.

***C.4. The socially beneficial uses of the output of the proposed facility, or a suitable modification thereof, including its uses to protect or enhance environmental quality.***

151. The Facility is expected to provide needed capacity and energy resources for Xcel Energy ratepayers as well as other users across Minnesota. Ex. 45 (K. Morton Pre-Filed Testimony) at 36.

152. The Facility is both economically and environmentally attractive. While the Facility uses a relatively clean fuel, combustion technology can still have some impact on the surrounding environment. Ex. 45 (K. Morton Pre-Filed Testimony) at 35-38. The Facility's proposed location would minimize the construction of natural gas pipeline and transmission lines. See EQB Site Permit discussion below.

153. The Facility is expected to provide benefits to society in a manner compatible with protecting natural and socioeconomic environments, including human health.

154. The preceding findings, set forth in Certificate of Need Sections A through C, set forth the benefits of the Facility, including its uses to protect or enhance environmental quality, and to increase reliability of energy supply in Minnesota and the region, as required by Minn. Stat. § 216B.243, subd. 3(5).

***D. The Record Demonstrates that the Design, Construction, and Operation of the Proposed Facility, or a Suitable Modification of the Facility, Will Comply with Relevant Policies, Rules, and Regulations of Other State and Federal Agencies and Local Governments.***

155. Mankato Energy has stated that it plans to comply with all relevant policies, rules, and regulations of state and federal agencies and local governments applicable to construction and operation of the Facility. There was no evidence that Mankato Energy could not or would not comply. Ex. 1 (CON Application) 7-1 to 7-3; Addendum to Site Permit Application at 4-1.

## **EQB SITE PERMIT**

### **A. Detailed Description of the Plant and Associated Facilities**

156. As discussed above, the major equipment to be installed will include:

- a) Two natural gas-fired combined cycle combustion turbine generators, capable of using low sulfur distillate oil as a secondary fuel;
- b) Two heat recovery steam generators, each equipped with natural gas-fired duct burners;
- c) One steam turbine generator and condenser; and
- d) A multi-cell mechanical draft evaporative cooling tower.
- e) Additional municipal wastewater treatment facilities will be located on land owned by the City of Mankato that is part of the municipal water treatment plant. It is contemplated that these additional wastewater treatment facilities will be designed and constructed by Mankato Energy, but owned and operated by the City of Mankato. Exhibit 47 is a process flow diagram of the Mankato Energy Center process. Exhibit 48 is a site layout of the proposed facility showing the Facility footprint and the non-exempt equipment subject to the CON Application.

Ex. 13 (Site Permit Application) at 2-7.

157. Ancillary structures/buildings required for a safe and efficient operating power plant will include:

- a) Auxiliary boiler;
- b) Emergency generator;
- c) Fire suppression systems, including a diesel-fueled fire pump;
- d) Fuel supply systems, consisting of a natural gas conditioning system and a distillate fuel oil storage and handling system;
- e) Steam supply piping;
- f) Plant electrical systems; and
- g) Plant buildings.

Ex. 13 (Site Permit Application) at 2-17.

## **B. Natural Gas Pipeline Interconnection**

158. The Facility will connect to the Northern Natural Gas (“NNG”) pipeline located approximately 3.2 miles east of the Facility site. Initially, Mankato Energy indicated that gas would be transported from the NNG pipeline to the Facility through a new 12 or 16-inch diameter service distribution line (constructed and owned by Mankato Energy), but testimony by Mr. Goodwin at the evidentiary hearing established that Mankato Energy intends to construct a 20-inch diameter pipeline in order to obtain gas pressure at the appropriate levels. Ex. 13 (Site Permit Application) at 3-1 to 3-2; Ex. 60 (Pipeline Routing Permit) at 2-2; Ex. 50 (J. Goodwin Pre-Filed Testimony) at 4; Hearing Transcript, July 12, 2004, at pages 99-100. The proposed route generally follows an existing transmission line right of way, minimizing potential impacts to affected landowners. Ex. 50 (J. Goodwin Pre-Filed Testimony) at 4; Ex. 13 (Site Permit Application) at 3-1 to 3-2; Ex. 4 (Response to DOC Information Requests 1-39) at Response 14; J. Goodwin Testimony, July 12, 2004, at pages 85-87; Ex. 50 (Pipeline Route Map) at JMG-1.

## **C. Transmission Interconnection**

159. The Facility will have direct access to the Wilmarth Substation located approximately 1,000 feet directly west of the Facility site. Ex. 13 (Site Permit Application) at 3-2 to 3-4. Thus, the Facility will not require construction of a lengthy off-site HVTL. *Id.* The interconnection scheme will consist of one interconnection directly into the 345 kV bus and two interconnections directly into two separate 115 kV bus positions. Ex. 68 (J. Alders Pre-Filed Testimony) at 3; Ex. 36 (Environmental Assessment) at 62; Ex. 4 (Response to DOC Information Requests 1-39) at Response 16. The lines will be built, owned, and operated by Xcel Energy. Ex. 13 (Site Permit Application) at 3-2 to 3-4. The proposed HVTL route is entirely on land owned either by Mankato Energy or Xcel Energy. Ex. 36 (Environmental Assessment) at 115.

160. Results of the Midwest Independent System Operator (“MISO”) Interconnection Evaluation Study indicate the Facility will not adversely affect the stability of other generators nor further degrade the regional stability of the bulk power system; interconnection of the Facility will not negatively impact the electric grid. Ex. 36 (Environmental Assessment) at 63; Ex. 45 (K. Morton Pre-Filed Testimony) at 8.

161. The addition of the Facility to the existing utility grid system will have positive impacts for Minnesota in both generation and transmission benefits. Ex. 36 (Environmental Assessment) at 61. Adding the Facility, which will be a large, efficient, and low-cost generator, in an area of Minnesota that does not have such a generator will benefit the stability and reliability of the system by providing local voltage support. *Id.* Benefits are also realized by addressing all possible contingent faults through reinforcement of the local electric grid as extreme conditions warrant. *Id.* at 63. Adequate reinforcement for all contingent faults means a higher degree of reliability under normal conditions. *Id.*

## **D. Raw Water Supply**

162. Raw water used at the Facility for non-contact cooling water and process water will be supplied by the City of Mankato in the form of treated wastewater effluent from the municipal wastewater treatment plant (“WWTP”). The Mankato WWTP is located approximately one mile south of the Facility site on the east bank of the Minnesota River and treats municipal wastewater flows received from both the communities of Mankato and North Mankato. The Mankato WWTP, which recently underwent a \$24.5 million upgrade and expansion in 2000, has

adequate capacity to meet the Facility's water needs. The treated wastewater effluent will be piped to the Facility via a buried underground pipeline to be constructed within existing rights-of-way. Ex. 13 (Site Permit Application) at 3-4.

163. No groundwater wells will be installed on site to serve the Facility. Ex. 13 (Site Permit Application) at 5-9. Cooling and process water will be supplied from effluent taken from the Mankato municipal wastewater treatment plant and piped through a dedicated line to the Facility. Id.

#### **E. Generation and Treatment of Wastewater**

164. Facility non-contact cooling wastewater will be returned to the WWTP at a point downstream of the supply connection for discharge under the City of Mankato NPDES Permit. Testimony of J. Goodwin, July 12, 2004, at pages 91-97; see Ex. 57 (MEC Cooling Water System and Attachments) at Attachments C & D (Effluent System Treatment Process and Water Balance Diagrams). The non-contact wastewater will be treated for removal of suspended solids and phosphorus prior to being returned to the WWTP, thereby improving the quality of Mankato's wastewater prior to discharge into the Minnesota River. Ex. 45 (K. Morton Pre-Filed Testimony) at 38-39; Testimony of J. Goodwin, July 12, 2004, at pages 92-97. To accommodate the return of non-contact cooling water to the WWTP, the City of Mankato will amend and update its NPDES permit renewal application, which is currently pending before the MPCA. Testimony of J. Goodwin, July 12, 2004, at pages 96-97. The City of Mankato has agreed to facilitate the arrangement, which would allow the City to discharge the Facility's wastewater through the City outfall and under the City NPDES Permit. Id. at 92-93. Domestic wastewater generated by the Facility will be discharged directly to the City of Mankato's sanitary sewer system through a lateral service connection line. Ex. 13 (Site Permit Application) at 8-13.

165. Facility has been designed to maximize water reuse and recycling and to minimize wastewater discharges. Ex. 13 (Site Permit Application) at 8-11. Boiler blowdown and oil/water separator decant will be recycled to supplement the makeup water for the cooling tower and are components of the cooling tower blowdown. Id. Process wastewater consisting of cooling tower blowdown, reverse osmosis reject, and other minor low volume waste streams will be treated onsite and then returned to the WWTP. Testimony of J. Goodwin, July 12, 2004, at pages 91-97.

166. A minor amount of wastewater also will be generated from intermittent off-line washing of the combustion turbines to remove any particulates accumulated on the compressor blades. The used wash water will be collected and stored in an onsite holding tank and will be trucked to a permitted offsite disposal facility by a licensed hauler on an as-needed basis. Ex. 13 (Site Permit Application) at 8-12 to 8-13.

#### **F. Environmental and Socioeconomic Impacts Required to Be Considered by Law**

167. The alternative site permit review process set forth in Minn. Stat. § 116C.575 incorporates Minn. Stat. § 116C.57, subd. 4, which provides that the EQB shall be guided by the following responsibilities, procedures, and considerations:

- a) Evaluation of research and investigations relating to the effects on land, water and air resources of large electric power generating plants and high voltage transmission line routes and the effects of water and air discharges and electric fields resulting from such facilities on public health

and welfare, vegetation, animals, materials and aesthetic values, including base line studies, predictive modeling, and monitoring of the water and air mass at proposed and operating sites and routes, evaluation of new or improved methods for minimizing adverse impacts of water and air discharges and other matters pertaining to the effects of power plants on the water and air environment;

- b) Environmental evaluation of sites and routes proposed for future development and expansion and their relationship to the land, water, air and human resources of the state;
- c) Evaluation of the effects of new electric power generation and transmission technologies and systems related to power plants designed to minimize adverse environmental effects;
- d) Evaluation of the potential for beneficial uses of waste energy from proposed large electric power generating plants;
- e) Analysis of the direct and indirect economic impact of proposed sites and routes including, but not limited to, productive agricultural land lost or impaired;
- f) Evaluation of adverse direct and indirect environmental effects which cannot be avoided should the proposed site and route be accepted;
- g) Evaluation of alternatives to the applicant's proposed site or route proposed pursuant to Minn. Stat. § 116C.57, subdivisions 1 and 2;
- h) Evaluation of potential routes which would use or parallel existing railroad and highway rights-of-way.
- i) Evaluation of governmental survey lines and other natural division lines of agricultural land so as to minimize interference with agricultural operations;
- j) Evaluation of the future needs for additional high voltage transmission lines in the same general area as any proposed route, and the advisability of ordering the construction of structures capable of expansion in transmission capacity through multiple circuiting or design modification;
- k) Evaluation of irreversible and irretrievable commitments of resources should the proposed site or route be approved;
- l) Where appropriate, consideration of problems raised by other state and federal agencies and local entities;
- m) If the board's rules are substantially similar to existing rules and regulations of a federal agency to which the utility in the state is subject, the federal rules and regulations shall be applied by the board; and;
- n) No site or route shall be designated which violates state agency rules.



The application and the Final Environmental Assessment contain adequate information to allow the EQB to consider these factors.

### **G. Site Considerations**

168. Minn. R. 4400.3050 requires that the EQB Site Permit process be guided by specified siting considerations. Each specific consideration will be assessed in the following Findings.

#### ***Effects on Human Settlement***

169. Minn. R. 4400.3150 requires that the EQB must consider the effects of the proposed sites on human settlement, including but not limited to, displacement, noise, aesthetics, community benefits, cultural values, recreation, and public services.

170. In general, the effects on human settlement are very limited due to the selection of a pre-existing industrial site. Ex. 13 (Site Permit Application) at 4-2. There are no residences at the site, and the nearest residential dwelling is located approximately 1,500 feet away from the center of the site. *Id.* Mankato Energy has reached an agreement with the owner of the residential property located closest to the Facility (identified as Residential Receptor 1 on Figure 10 in the Site Permit Application) to purchase that property prior to operation of the Facility.<sup>3</sup> *See* Testimony of J. Goodwin, July 12, 2004, at pages 111-112; Addendum to Site Permit Application at 2-1. Therefore, no additional population displacement or adverse impacts on housing will occur as a direct result of project construction and operation. Ex. 36 (Environmental Assessment) at 67.

171. No displacement of any residences or businesses will occur as a result of the construction of the HVTL along the preferred or alternative routes. Ex. 36 (Environmental Assessment) at 110.

#### ***Noise***

172. Construction noise is unavoidable, but the impacts are temporary as construction is a limited duration activity and a number of noise-abatement measures will be implemented to help mitigate these impacts. Ex. 36 (Environmental Assessment) at 71-72, 116; Ex. 13 (Site Permit Application) at 4-6.

173. The Facility will install equipment that may include stack silencers, low-noise fans, and related equipment at the cooling tower, equipment enclosures and other noise control methods as necessary to mitigate noise emissions during normal operation. Ex. 36 (Environmental Assessment) at 74. Noise impacts due to the transmission line will be minimal and are not expected to differ from the impacts already being experienced due to the existing transmission line. Ex. 13 (Site Permit Application) at 4-2 to 4-6.

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<sup>3</sup> The residential property at issue is zoned as Residential Transitional. *See* Addendum to Site Permit Application at 2-1. This type of zoning is a tool used in Lime Township to designate existing homes in areas that are targeted for non-residential development. *Id.* The zoning designation is intended to allow for the continuation of residential uses in areas of the Township designated for industrial or commercial use in the Land Use Plan. *Id.* Once the current resident moves away, the zoning designation of the property is changed. *Id.*

174. Noise impacts due to plant operation comply with applicable Minnesota noise standards. Ex. 36 (Environmental Assessment) at 74; Ex. 13 (Site Permit Application) at 4-2 to 4-6; Ex. 59 (Calculated Plant Operational Noise Isopleths). Noise data for the Facility has been adjusted to reflect the application of the final plan for noise mitigation measures taking into account the next nearest noise receptors. Id. This updated noise data was combined with the baseline noise survey results previously used to estimate projected noise levels at nearby receptors and reconfirm compliance with noise standards at those next nearest receptors. Id. Noise isopleths and analysis indicate that the Facility will comply with Minnesota noise standards at all required locations. Id. at 2-2; Goodwin Testimony, July 12, 2004, at 99; Ex. 36 (Environmental Assessment) at 74.

175. HVTL transmission conductors produce noise under certain conditions. Ex. 36 (Environmental Assessment) at 116. Noise levels during operation and maintenance of the HVTL will be minimal and not exceed levels similar to background household levels. Id.

### ***Aesthetics***

176. The tallest structures at the Facility will be the two HRSG stacks, which will be 200 feet tall. Ex. 36 (Environmental Assessment) at 68. The HRSG stacks will be most visible from the west end of Summit Avenue and would possibly be visible from along the Minnesota River depending on the vantage point. Id. The stacks will look similar to the two stacks located at the Wilmarth Generating Plant. Id. Due to the existing topography, finished grades at the demolition waste landfill, a dense grove of mature trees located around the perimeter of the site, and the distance away from adjacent roadways, most of the other structures at the Facility should not be visible to the general public. Id.

177. As flue gas is emitted from the HRSG stacks, the water vapor present in the flue gas may condense to form a visible steam plume. Ex. 36 (Environmental Assessment) at 68. In addition, water vapor emitted from the cooling tower may result in a similar visible plume. Id. The length and persistence of the plumes are influenced by prevailing weather conditions such as temperature, relative humidity, and wind speed. Id. The plumes would be most persistent and visible during cold and damp weather, principally during the winter. Id. On most days of the year, however, visible steam or vapor plumes, if present at all, would disperse and evaporate after traveling only a moderate distance aloft. Id.

178. In addition to effects on visibility associated with water vapor, certain stack emissions have the potential to impact local visibility. Ex. 36 (Environmental Assessment) at 68. Emissions of particulate matter can reduce visibility by scattering light, and emissions of nitrogen oxides can reduce visibility by absorbing light. Id. The Facility will apply BACT for both of these visibility-related pollutants. Id. Accordingly, emissions from the Facility are not expected to have a significant impact on local visibility. Id. This conclusion is substantiated by the fact that the maximum projected air quality impacts of the Facility are well below the federal and state ambient air quality standards. Id.

179. The area around the Facility site consists of industrial and light industrial uses, and most of the structures will be far enough from adjacent roadways and/or screened from view by physical barriers. Ex. 36 (Environmental Assessment) at 69. Accordingly, the Facility will blend in well with existing adjacent industrial and manufacturing facilities, including the

Wilmarth Generating Station, which has been part of the local area for more than 50 years. Id. at 69; Ex. 50 (J. Goodwin Pre-Filed Testimony) at 17.

180. The proximity to the Wilmarth Substation minimizes the need for additional transmission lines, improving the aesthetics relative to other sites. Ex. 13 (Site Permit Application) at 4-1, 4-7, 4-9, 5-13. The aesthetic and visual impact of the HVTL will be insignificant. Ex. 36 (Environmental Assessment) at 116.

### ***Cultural Values, Archeological and Historic Resources***

181. There are no significant cultural resources associated with the Facility or HVTL. Ex. 36 (Environmental Assessment) at 76, 111. Review of the proposed facility sites by the Minnesota Historical Society State Historic Preservation Office identified no properties listed on the National or State Registers of Historical Places, and no known or suspected archaeological properties. Id.; Ex. 13 (Site Permit Application) at 4-11 to 4-12.

### ***Recreation***

182. No significant recreational resource exists on or immediately adjacent to the proposed facility site or the area around the HVTL. There should be no adverse impact on any recreational opportunities in the County. Ex. 13 (Site Permit Application) at 4-12 to 4-13; Ex. 36 (Environmental Assessment) at 77.

### ***Public Services***

183. There will be no adverse impacts on the transportation system. The existing public roadway network and site access roads are adequate to serve the Facility. Ex. 13 (Site Permit Application) at 4-13; Ex. 36 (Environmental Assessment) at 80. Minor upgrades to the existing railroad tracks may be required in the event that the tracks running along the south side of the site are utilized to deliver materials or equipment during construction. Id.

184. Water and sewer services will be provided by the City of Mankato in accordance with an interconnection agreement or service contract between Mankato Energy and the City. Ex. 36 (Environmental Assessment) at 80; Ex. 13 (Site Permit Application) at 2-13 to 2-16, 3-4, 4-14. The City will supply both process water and potable water to the Facility and will receive wastewater discharges. Id. Mankato Energy will construct its own water storage facilities on site. Wherever possible, utilities will follow existing easements to help reduce costs and minimize local impacts. Id.

185. Facility wastewater will be returned to the WWTP for discharge under the City of Mankato NPDES Permit. Testimony of J. Goodwin, July 12, 2004, at pages 91-97; see Ex. 57 (MEC Cooling Water System and Attachments) at Attachments C & D (Effluent System Treatment Process and Water Balance Diagrams). In order to accommodate the return of non-contact cooling water to the WWTP, the City of Mankato will have to amend and update their NPDES permit renewal application, which is currently pending before the MPCA. Testimony of J. Goodwin, July 12, 2004, at pages 96-97. The City of Mankato has agreed to facilitate the arrangement, which would allow the City to discharge the Facility's wastewater through the City outfall and under the City NPDES Permit. Id. at 92-93.

186. Mankato Energy expects that it will privately contract with local waste haulers to properly collect and dispose of all liquid and solid wastes generated at the Facility. Ex. 13 (Site

Permit Application) at 4-14; Ex. 36 (Environmental Assessment) at 81. No municipal services for this work are expected to be required. Id.

187. During construction of the Facility, the City of Mankato will provide fire and police protection and rescue services. The Facility will be equipped with a security system and fire suppression system. The City of Mankato will continue to provide emergency services as necessary once the plant is up and running, and coverage of the Facility should not affect the existing capabilities of the City's fire and police departments. Ex. 13 (Site Permit Application) at 4-14 to 4-15; Ex. 36 (Environmental Assessment) at 81.

### ***Traffic Impacts During Both Construction and Operation***

188. Existing traffic levels will increase temporarily during construction of the Facility and HVTL, varying during different phases of the construction period. Construction of the first phase of the Facility will take place over a period of approximately 20 months and will employ as many as 450 construction workers at peak construction periods. Ex. 50 (J. Goodwin Pre-Filed Testimony) at 15; Ex. 36 (Environmental Assessment) at 78-79. It is anticipated that workers commuting to the site from the three-county area (Blue Earth, Nicollet, and Le Sueur) will fill most of the construction job needs. Ex. 13 (Site Permit Application) at 5-10 to 5-12. Construction traffic at the site will include the movement of work crews, delivery of construction equipment and materials, and support personnel. Id.; Ex. 36 (Environmental Assessment) at 78-79.

189. Impacts on local roads can be expected at the beginning and end of each workday and at shift changes. Occasional large and/or slow-moving vehicles on local roadways (similar to the movement of existing farm equipment and machinery) and utilities installed to serve the Facility (gas, sewer, water, telephone, etc.) may also temporarily impact traffic during construction and could result in temporary lane closures and/or traffic rerouting. These temporary closures and rerouting will be coordinated with the City, Township, and County as appropriate. A set of existing railroad tracks no longer in use runs along the south side of the site. It has not yet been determined whether these tracks and the existing railway system will be utilized to deliver any materials or equipment during construction of the Facility. If the rail line is utilized, it would be limited to transporting a few pieces of very large equipment and possibly some bulk equipment like boiler pipes, and traffic impacts would be minimal. Ex. 13 (Site Permit Application) at 5-10 to 5-12; Ex. 36 (Environmental Assessment) at 78-79.

190. Given the location of the Facility in an industrial area on the edge of town and the capacity of existing highways and local roads serving the site and surrounding area, vehicular traffic during construction and operation of the Facility should not significantly affect existing traffic flows except on rare occasions when the natural gas supply is interrupted and tanker trucks are needed to deliver fuel oil on a continuous basis. Ex. 13 (Site Permit Application) at 5-11 to 5-12; Ex. 50 (J. Goodwin Pre-Filed Testimony) at 21-22; Ex. 36 (Environmental Assessment) at 79.

### ***Aircraft***

191. The tallest structures at the Facility will be the two HRSG stacks, which are proposed to be 200 feet tall, and will not trigger Federal Aviation Administration ("FAA") notification requirements. Ex. 36 (Environmental Assessment) at 68, 79. The Facility should not represent a potential impact to aircraft operations because of the distance from the Mankato

Municipal Airport and the orientation and elevation of the runways. Ex. 36 (Environmental Assessment) at 80.

### ***Community Benefits to be Expected from the Proposed Plant and Transmission Line Interconnection***

192. As previously discussed, a number of benefits to the immediate area and beyond have been identified, including temporary and permanent job creation, additional property tax revenues directly attributable to the Facility, and the addition of clean, efficient, and reliable generating capacity to the regional electric supply system. Ex. 13 (Site Permit Application) at 4-10 to 4-11; CON Application at 4-1 to 4-3; Ex. 36 (Environmental Assessment) at 74-75.

193. In addition to the contribution of an estimated \$400,000 in real property taxes for Blue Earth County and the local school district each year for the next 30 years, the State of Minnesota and Blue Earth County will also receive income and sales taxes from the construction of the Project. Ex. 45 (K. Morton Pre-Filed Testimony) at 35-36; Ex. 36 (Environmental Assessment) at 74-75.

194. Mankato Energy intends to be an active member of the local community, participating in charitable events, community service organizations, and outreach programs. Ex. 36 (Environmental Assessment) at 75.

### ***Health and Safety***

195. The Facility will not have measurable impacts on public health and safety because emissions will be minimized through the use of clean fuels and mitigation efforts. See Environmental Assessment. In addition, construction will occur on a preexisting industrial site, minimizing the impact that would occur at other greenfield sites. Ex. 13 (Site Permit Application) at 4-1 to 4-2.

196. Construction of the Facility will be managed by Calpine Construction Management Company, Inc. ("Calpine Construction"). Each project managed by this organization includes a dedicated on-site construction safety representative. This individual is responsible for ensuring that all necessary safety procedures are developed and implemented for all personnel working at the Facility construction site, as well as being responsible for implementation of all such procedures. Calpine Construction also is supported on an as-needed basis by Calpine's Safety, Health & Environmental Department. Ex. 50 (J. Goodwin Pre-Filed Testimony) at 16.

197. The issue of electric and magnetic field ("EMF") exposure has been examined by Xcel Energy and the EQB. Ex. 36 (Environmental Assessment) 111-115. Extensive research has not shown any discernable health effects from transmission line EMF. Id. at 113. Xcel Energy follows "prudent avoidance" guidelines suggested by most public agencies. Id. at 111. In addition, Xcel Energy will conduct EMF measurements for landowners, customers, and employees who request them. Id.

### ***Land-Based Economies, Including Agriculture, Forestry, Tourism and Mining***

198. The Facility will not affect the agricultural, forestry, mining industries in the area nor will the Facility adversely affect existing tourism. Ex. 13 (Site Permit Application) at 6-1 to 6-2; Ex. 36 (Environmental Assessment) at 66-67.

199. No agricultural land will be taken out of production as a result of the construction and operation of the Facility. The closest agricultural lands are located approximately one-half mile to the north and will not be affected by the Facility. Ex. 13 (Site Permit Application) at 6-1; Ex. 36 (Environmental Assessment) at 66.

200. There will be no adverse effects to the forestry economy as a result of the Facility. The Facility site is not located on or near any commercial forestry land. Ex. 13 (Site Permit Application) at 6-2; Ex. 36 (Environmental Assessment) at 66.

201. There will be no adverse effects to the tourism economy from the Facility. The Facility site is not located on or near any tourist attractions. Ex. 13 (Site Permit Application) 6-2; Ex. 36 (Environmental Assessment) at 67.

202. There will be no adverse effects to the mining economy from the Facility. The Facility site is a former limestone quarry that has been mined to completion. There are other old limestone quarries in the area but no active mining is taking place at this time. Land is currently being cleared along the west side of County Road 5 approximately one-mile north of the Facility site for a future gravel mining operation, but this area will not be affected by the Facility. Ex. 13 (Site Permit Application) 6-2; Ex. 36 (Environmental Assessment) at 76.

### ***Effects of The Project on the Natural Environment***

203. Air Quality. The maximum projected air quality impacts on plants, animals, and soils resulting from construction and operation of the Facility are anticipated to be insignificant. Ex. 50 (J. Goodwin Pre-Filed Testimony) at 18-20. The Facility will utilize BACT pollution prevention equipment and projected impacts from the Facility will comply with the primary and secondary National Ambient Air Quality Standards (“NAAQS”) and Prevention of Significant Deterioration (“PSD”) increment standards. Ex. 13 (Site Permit Application) at 8-1; Ex. 36 (Environmental Assessment) at 83; Addendum to Site Permit Application at 3-1 to 3-5 (updating air quality analysis on July 23, 2004, to include the final ambient air quality analysis as performed for the Facility and submitted to the MPCA). EPA has set the primary standards to protect human health, and the secondary standards to protect public welfare, including that of visibility, plants, soils, and animals. Id. The PSD increment standards prevent the degradation of air quality in areas with clean healthful air. Id.

204. Mankato Energy filed a Prevention of Significant Deterioration (“PSD”) Part 70 Air Permit Application with the MPCA on December 3, 2003, followed by supplemental information on June 2, 2004. Ex. 51 (PSD Part 70 Air Permit Application); Ex. 52 (Supplemental Information on Air Permit).

205. On February 18, 2004, Mankato Energy submitted to the MPCA an Air Emissions Risk Analysis (“AERA”) Report in accordance with MPCA technical guidance. Ex. 36 (Environmental Assessment) at 88-89; Ex. 54 (AERA Report); Ex. 55 (AERA Addendum). The purpose of an AERA is to assess the potential health risk attributed to air emissions from a given source. Id. Because the MPCA exempts natural gas combustion turbines from AERA review, the Mankato Energy AERA addresses the emissions resulting from combustion of the Facility’s low-sulfur distillate oil backup fuel. On July 8, 2004, the MPCA found that no additional air toxics risk analysis was necessary and that the Facility could proceed with permitting. Id. Ex. 56 (7/8/04 MPCA Comments to AERA). The final AERA determination of the MPCA Risk Managers is reflected in their July 22, 2004, letter to the ALJ regarding Comments on the Environmental Assessment for Mankato Energy Center. In that letter, the MPCA concluded that

the Facility air risk analysis is complete and that the impacts associated with air emissions that are reasonably expected to occur from the project do not have the potential for significant environmental or health impacts.

206. As previously discussed, the water vapor present in emissions from Facility stacks and cooling towers can condense to form a visible steam plume. Ex. 36 (Environmental Assessment) at 90. On most days of the year, however, visible steam or vapor plumes, if present, will disperse and evaporate after traveling only a moderate distance aloft. Id. The plume rising from the 200-foot stacks will dissipate before reaching ground level. Id. at 91. The cooling tower will incorporate high-efficiency drift eliminators to minimize fogging and icing potential from the Facility. Id.

207. Mankato Energy has proposed to install driver/traffic warning lights along the roadways where fogging and icing might be expected to occur. Ex. 36 (Environmental Assessment) at 91. The lights and signage, which would be activated during potential events (based on weather conditions), would alert drivers to low visibility conditions and possible slippery road conditions. Id. Mankato Energy will also notify local police to request assistance in alerting motorists of potential driving conditions near the Facility. Id.

208. Potential dust resulting from construction activities and truck traffic would be controlled through standard construction practices, which may include watering of exposed surfaces, covering disturbed areas, paving, reduced speed limits on the site or other such practices as needed. Ex. 36 (Environmental Assessment) at 91. Following construction, fugitive dust related to vehicular traffic at the Facility will be minimized through paving of the access road and parking areas. Id.

209. There will be temporary, construction-related air impacts during HVTL construction. However, there will be no significant adverse impacts to the surrounding environment due to the short and intermittent nature of the emission and dust-producing construction phases. Ex. 36 (Environmental Assessment) at 109.

210. Land. Mankato Energy conducted a Phase I and limited Phase II Environmental Site Assessment to determine the potential for environmental liabilities associated with the Facility site and adjacent properties. Ex. 36 (Environmental Assessment) at 101. It was determined that no environmental hazards are evident at the Facility that would require further action. Id. at 102.

211. Surface and subsurface investigations were performed to help describe the site geology, characterize existing soil conditions, and determine groundwater levels in the area. Ex. 36 (Environmental Assessment) at 102; Ex. 13 (Site Permit Application) 8-1 to 8-4. The results of these investigations indicate the Facility will not adversely affect this existing industrial site. Id.

212. The proposed HVTL takes advantage of the Facility Site being adjacent to the existing Wilmarth Substation. Ex. 36 (Environmental Assessment) at 115. The only landowners involved will be Mankato Energy and Xcel Energy. Id. The existing land use is industrial and the land is zoned industrial. Id. Nonetheless, soil erosion control measures will be implemented during HVTL construction to minimize impacts. Ex. 36 (Environmental Assessment) at 111. Disturbed areas will be restored to their original condition to the extent practicable. Id.

213. The proposed HVTL route is consistent with the State's nonproliferation policy for selecting transmission line routes. Ex. 36 (Environmental Assessment) at 115. The route does not travel through any areas prohibited by Minn. R. 4400.3450, subparts 1 and 3, or Minn. R. 4400.3350. Id.

214. Water Resources. The site is well outside the Mankato wellhead protection area and will not utilize groundwater wells. Ex. 36 (Environmental Assessment) at 93; Ex. 13 (Site Permit Application) at 8-7. Cooling and process water will be supplied through a dedicated water line from the Mankato municipal wastewater treatment plant. Id. Spent cooling and process water will be piped back to the Mankato WWTP. Testimony of J. Goodwin, July 12, 2004, at pages 91-97. No potential impacts to existing groundwater resources or water supplies that could affect the public health and safety are anticipated as a result of construction and operation of the Facility. Ex. 36 (Environmental Assessment) at 93.

215. The Facility is not located within the 100-year floodplain. Ex. 36 (Environmental Assessment) at 93; Ex. 13 (Site Permit Application) at 8-5. Any site grading, excavation, and fill activities associated with site development would occur will above the 100-year floodplain and would not result in any floodplain impacts or undue risk of flooding. Id.

216. The Facility will maintain setback requirements from the drainage ditch running along the east side of the site that is classified as a tributary stream in the Blue Earth County Shore Land Ordinance. Ex. 36 (Environmental Assessment) at 94.

217. U.S. Fish and Wildlife National Wetlands Inventory maps indicate there are wetlands within the vicinity of the Facility. Ex. 36 (Environmental Assessment) at 94. However, since the portion of the site to be developed for the Facility is in upland areas or within disturbed areas of the former limestone quarry and current demolition waste landfill and composting site, it appears that no existing wetlands would be impacted by the Facility itself. Id. The proposed HVTL will cross known wetlands. Id. at 117-118. Actual wetland impacts will be determined once the substation and transmission line and transmission line designs are finalized. Id. at 118. Xcel Energy will make every attempt to minimize impacts by spanning the wetlands area if possible. Id. Should some impacts be unavoidable, Xcel Energy will acquire the appropriate permits from the U.S. Army Corps of Engineers. Id.

218. An increase in stormwater runoff can be expected as a result of the added impervious surfaces from the Facility. Ex. 36 (Environmental Assessment) at 96; Ex. 13 (Site Permit Application) at 8-7 to 8-10. Stormwater runoff from general plant areas (non-process areas) will be directed to a stormwater pond to be constructed on the east side of site. Id. The stormwater pond will meet the City of Mankato's requirements for water retention areas. Id. The stormwater pond will function as an infiltration basin, retaining water for short periods of time and thus providing additional stormwater treatment and further reducing runoff volumes and peak discharges. Id.

219. Stormwater runoff where there is potential for contamination by oils and other chemicals from pumps and motors will be confined within curbed areas and drained to two area sump pump systems. Ex. 36 (Environmental Assessment) at 96-97; Ex. 13 (Site Permit Application) at 8-7 to 8-10. It will then be routed to the Facility's oil/water separator and recycled into the cooling tower make-up water system. Id. All materials removed from the structure will be properly managed and disposed of offsite in accordance with all applicable local, state, and federal requirements. Id. Best management practices will be implemented to manage stormwater runoff. Id. Furthermore, a Stormwater Pollution Prevention Plan



("SWPPP") will be prepared for the Facility with coverage under the Minnesota NPDES General Stormwater Discharge Permit for Industrial Activities. Id.; Ex. 50 (Environmental Assessment) at 97.

220. In accordance with the Minnesota NPDES General Stormwater Discharge Permit for Industrial Activities requirements, Mankato Energy will work with the City of Mankato to ensure that adequate measures are taken to minimize soil erosion and sedimentation on the site. Ex. 36 (Environmental Assessment) at 97-98. Temporary erosion and sediment control measures will be maintained during construction and will remain in place until the Facility site has been stabilized and vegetation has been reestablished. Id.

221. Process wastewater from the Facility will be returned to the Mankato WWTP. Testimony of J. Goodwin, July 12, 2004, at pages 91-97. Domestic wastewater will be discharged directly to the City of Mankato's sanitary sewer system through a lateral service connection line. Ex. 36 (Environmental Assessment) at 99. This discharge will be authorized by the City of Mankato and subject to any appropriate discharge limits and monitoring requirements. Id.

### ***Effect on Rare and Unique Natural Resources***

222. The U.S. Fish and Wildlife Service ("USFWS") and the Minnesota Department of Natural Resources ("DNR") were contacted about possible threatened and endangered plant and animal species that may exist at or near the Facility and HVTL route that may be affected by the its construction and/or operation. According to correspondence with the USFWS and DNR, review of their records indicates that no significant species have been documented at the Facility site. Ex. 13 (Site Permit Application) at 8-13 to 8-14; Ex. 36 (Environmental Assessment) at 103-104, 109. Based on these findings and the disturbed nature of the existing site and surrounding area, the Facility should not adversely affect any significant biological resources including plants, animals, and critical wildlife habitat areas. Id. Although there will be some loss of vegetation, trees, and shrubs as a result of the Facility and HVTL construction, abundant wildlife habitat exists in areas surrounding the Site. Id. There will be no significant impact on local biological resources. Id.

223. A review of the Minnesota Natural Heritage Information System database was requested from the DNR to determine if any rare plant communities or animal species, unique resources, or other significant natural features are known to occur on or near the proposed project site (including the HVTL). Ex. 36 (Environmental Assessment) at 104, 110. As stated in a letter from the DNR dated September 11, 2003, results of the database search indicated that nine rare features consisting of animals and natural plant communities were known to occur within the vicinity of the project area. Id. at Appendix D (DNR Letter). These rare features are beyond the site boundaries and, therefore, will not be directly affected by the project. Id. According to the United States Fish and Wildlife Service, the Facility will not adversely affect any threatened or endangered species or their critical habitat. Ex. 36 (Environmental Assessment) at 104, 110.

224. The Facility will have no significant impacts on shoreland protection areas, wetlands, rivers, or recreation areas. Ex. 50 (J. Goodwin Pre-Filed Testimony) at 24-25; Ex. 36 (Environmental Assessment) at 77 (recreation areas) and 94 (wetlands and shoreland protection areas).

### ***Energy Efficiency***

225. The Facility will utilize state-of-the-art combined cycle combustion turbine technology that provides high levels of energy efficiency relative to single cycle designs or alternative fossil fuel facilities. Ex. 1 (CON Application) at 2-2; Ex. 45 (K. Morton Pre-Filed Testimony) at 19-22.

#### ***Potential Expansion of Generating Capacity***

226. While there are no plans for future expansion of the Facility to increase electrical output, Mankato Energy may elect to build the Facility in stages. The proposed facility will be constructed on an existing industrial site and will be designed as a stand-alone facility to generate 655 megawatts (at summer conditions) of electricity for export and sale to Xcel Energy and other customers. In staged construction, the construction of the first combustion turbine, the first HRSG, and the steam turbine, along with all associated machinery and equipment, would commence immediately. The second combustion turbine and the second HRSG would be installed at a future date. Ex. 13 (Site Permit Application) at 2-21.

#### ***Use of Paralleling of Existing Rights-of-Way, Survey Lines, Natural Division Lines, and Agricultural Field Boundaries***

227. The Facility capitalizes on its proximity to existing natural gas pipelines and the Wilmarth Substation. The proposed pipeline will be constructed along an existing HVTL right-of-way in order to take advantage of existing rights-of-way. Ex. 50 (J. Goodwin Pre-Filed Testimony) at 4. Testimony of J. Goodwin, July 12, 2004, at pages 87-88.

#### ***Use of Existing Large Electric Generating Plant Sites***

228. The Applicant does not own or operate any existing large electric generating plant sites. The Facility will benefit from its proximity to the Xcel Energy Wilmarth Generating Facility in that it is close to the associated Wilmarth Substation (a major substation in Minnesota), Ex. 50 (J. Goodwin Pre-Filed Testimony) at 5, and will be compatible with the land uses in the immediate area. Id. at 16-17.

#### ***Use of Existing Transportation, Pipeline, and Electric Transmission Systems or Rights-of-Way***

229. As previously discussed, the Facility will make extensive use of existing transportation, pipeline, and electric transmission systems or rights-of-way. Ex. 13 (Site Permit Application) at 3-1 to 3-5.

#### ***Electrical System Reliability***

230. The Facility will be interconnected into the regional transmission system. Results of the MISO Interconnection Evaluation Study indicate the Facility will not adversely affect the stability of other generators nor further degrade the regional stability of the bulk power system; interconnection of the Facility will not negatively impact the electric grid. Ex. 45 (K. Morton Pre-Filed Testimony) at 8; Ex. 36 (Environmental Assessment) at 63.

#### ***Costs of Constructing, Operating, and Maintaining the Facility which are Dependent on Design and Route***

231. The costs associated with constructing, operating, and maintaining the Facility that are dependent on design and route are minimal compared to alternatives. The site was chosen due in part to the low costs of these factors associated with this location. See Ex. 13 (Site Permit Application) at 2-4 to 2-5.

***Adverse Human, Natural and Environmental Effects Which Cannot be Avoided as a Result of Construction and Operation of the Plant and Mitigation Strategies***

232. As discussed and documented in the Facility Environmental Assessment, the Facility will not cause significant adverse effects to humans or the environment. Ex. 36 (Environmental Assessment) at 104. As with any type of development, there will be some unavoidable impacts. Id. However, the Facility has been designed to minimize potential impacts to the greatest practical extent. Id. Furthermore, Mankato Energy will obtain all federal, state, and local permits required for construction and operation of the Facility. Id.

233. Noise. Noise will be generated during construction and operation of the Facility. The Facility site is located within an established industrial area on the edge of Mankato more than one-half mile from the nearest residential areas and approximately 2,700 feet from the nearest residential noise receptor (taking into account the agreement for Mankato Energy to purchase what would otherwise be the nearest residential noise receptor). Ex. 13 (Site Permit Application) at 4-3; Ex. 36 (Environmental Assessment) at 105; Testimony of J. Goodwin, July 12, 2004, at pages 97-99; Addendum to Site Permit Application at 2-1. Due to the planned noise mitigation measures that will be taken at the Facility, other noise sources in proximity to the Facility, and the distance to sensitive noise receptors, it is anticipated that any noise generated due to Facility construction and operation will not adversely affect the surrounding area. Id. The Facility will comply with the Minnesota Noise Standards (Minn. R. 7030.0040) for all off-site receptors. Id.

234. Aesthetics. The Facility is located within an industrial area on the north edge of Mankato, and most of the buildings and structures will be far enough away from adjacent roadways or screened from view by existing trees or other physical barriers; therefore, no significant visual impacts to the surrounding area are anticipated. Overall, the Facility will blend in well with existing adjacent industrial and manufacturing facilities including the Wilmarth Generating Station, which has been a part of the local landscape for more than 50 years. Ex. 13 (Site Permit Application) at 4-9; Ex. 36 (Environmental Assessment) at 68-69.

235. As flue gas is emitted from the HRSG stacks, the water vapor present in the flue gas may condense to form a visible steam plume. In addition, water vapor emitted from cooling towers may result in a similar, visible plume. The length and persistence of these visible plumes are influenced by prevailing weather conditions such as temperature, relative humidity, and wind speed. The plumes would be most persistent and visible during cold and damp weather, principally during the winter. On most days of the year, however, visible steam or vapor plumes, if present at all, would disperse and evaporate after traveling only a moderate distance aloft. Ex. 13 (Site Permit Application) at 4-9; Ex. 36 (Environmental Assessment) at 68-69.

236. In addition to effects on visibility associated with water vapor, certain stack emissions have the potential to impact local visibility. Emissions of particulate matter can reduce visibility by scattering light, and emissions of nitrogen oxides can reduce visibility by absorbing light. The Facility will apply BACT for both of these visibility related pollutants, as explained in the Environmental Assessment. Ex. 36 (Environmental Assessment) at 84-85. Furthermore, the emissions of nitrogen oxides will be continuously monitored to ensure

compliance with BACT-related emission limits. Accordingly, emissions from the Facility are not expected to have a significant impact on local visibility. Ex. 13 (Site Permit Application) at 4-9; Ex. 36 (Environmental Assessment) at 106.

237. Groundwater. All compounds that have the potential to contaminate the groundwater if accidentally released during construction and operation of the Facility will be stored and handled in a manner that complies with all applicable regulatory requirements and good environmental practice. All fuel oil storage will be subject to a Spill Prevention Control and Countermeasures plan. During construction, equipment fuel will be stored onsite in bermed areas with appropriate spill protection. Any groundwater withdrawals required to facilitate excavation for buildings and foundations will be made in compliance with appropriate permits to be issued the DNR. Ex. 13 (Site Permit Application) at 8-7 to 8-11; Ex. 36 (Environmental Assessment) at 93.

238. Wastewater. As previously discussed, process wastewater from the Facility will be returned to the Mankato WWTP for treatment. Testimony of J. Goodwin, July 12, 2004, at pages 91-97. Domestic wastewater will be discharged directly to the City of Mankato's sanitary sewer system through a lateral service connection line. Ex. 36 (Environmental Assessment) at 99.

239. Air. Selection of natural gas as the primary fuel is the main mitigation measure for air emissions impact. BACT will be employed for each of the five pollutants that exceed the threshold for PSD under the Clean Air Act. Air emissions will be managed by an air permit issued by the MPCA, with continuous emissions monitoring to ensure compliance. No significant air impacts are anticipated. Ex. 13 (Site Permit Application) at 5-1 to 5-9; Addendum to Site Permit Application at 3-1 to 3-5; Ex. 36 (Environmental Assessment) at 106.

### ***Prohibited and Excluded Sites***

240. Minn. R. 4400.3450, subparts 1 and 3, and Minn. R. 3350, list a number of sites where siting of a large electric power generating plant is prohibited or excluded. The proposed site is not in a prohibited or excluded area. Ex. 13 (Site Permit Application) at 2-2 to 2-3, 4-1 to 4-13; Ex. 36 (Environmental Assessment) at 115.

### ***Beneficial Uses of Waste Energy***

241. The use of a waste heat recovery boiler in the combined cycle process uses the waste heat from the combustion turbine to make steam to power a steam turbine and boosts the efficiency of the Facility. Ex. 1 (CON Application) at 2-2.

Based on the foregoing Findings, the Administrative Law Judge makes the following:

## **CONCLUSIONS**

1. Any of the foregoing Findings more properly designated as Conclusions are hereby adopted as such.
2. The Administrative Law Judge and the Minnesota Environmental Quality Board have jurisdiction over the subject matter of the hearing pursuant to Minn. Stat. §§ 116C.06 and 116C.575.

3. The Administrative Law Judge and the Minnesota Public Utilities Commission have jurisdiction over the subject matter of the hearing pursuant to Minn. Stat. §§ 216B.243 and 14.50.
4. All relevant substantive and procedural requirements of law and rules have been fulfilled prerequisite to the issuance of a Certificate of Site Compatibility to the applicant. The EQB provided legally sufficient public notice of the April 21, 2004, public meeting despite not publishing notice in a legal newspaper of general circulation or mailing notice by certified mail to local officials, as required by Minn. R. 4400.2500.
5. The MAPP forecasts presented in this proceeding have been prepared in a reasonable manner, are reasonably reliable, and are appropriate for determining the need for the Facility.
6. Mankato Energy does not promote energy consumption in Minnesota or elsewhere.
7. Current and planned facilities not requiring CONs are not adequate to meet projected needs.
8. The Facility will make efficient use of resources.
9. Denial of the CON to Mankato Energy will likely have an adverse effect upon the future adequacy, reliability, and efficiency of energy supply to the utilities in Minnesota, which are Mankato Energy's potential customers, and to the people of Minnesota and neighboring states.
10. Considering the size, type, timing, cost, natural and socioeconomic environmental effects, and reliability, a more reasonable and prudent alternative to the proposed facility has not been demonstrated by a preponderance of evidence on the record.
11. The record establishes that there is a growing demand for electricity in Minnesota, and that additional sources of generation are necessary to increase the reliability of the energy supply in Minnesota and the region.
12. The Facility is needed to meet the growing electricity demands of Minnesotans.
13. The Facility will provide benefits to society in a manner compatible with protecting the natural and socioeconomic environments, including human health.
14. The record does not demonstrate that the design, construction, and operation of the Facility will fail to comply with relevant policies, rules, and regulations of other state and federal agencies and local governments.
15. Mankato Energy has demonstrated that it has explored the possibility of generating power by means of renewable energy sources and has demonstrated that the Facility is less expensive (including environmental costs) than power generated by a renewable energy source.
16. Mankato Energy has demonstrated that it has considered the mandate of the Innovative Energy Project statute, Minn. Stat. § 216B.1694, subd. 1, and that no IGCC facility can meet the cost-effectiveness and timing requirements of the Facility.

17. The requirements for a Certificate of Need set forth in Minn. Stat. § 216B.243 and Minn. R. Ch. 7849 have been satisfied.
18. The use of water for cooling purposes at the proposed plant will not constitute a “once-through system” for groundwater within the meaning of Minn. Stat. § 103G.005, subd. 13(a), or 103G.271, subd. 5.
19. The site proposed by the Applicant for the construction of a large electrical power generation plant is acceptable under the provisions of Minn. Stat. § 116C.575, subd. 8, and Minn. R. 4400.3150.

Based upon the foregoing Conclusions, of Law, the Administrative Law Judge makes the following:

### **RECOMMENDATION**

1. That a Certificate of Need for a large electric power generating plant and the transmission lines directly associated with the plant that are necessary to interconnect the plant to the transmission system be issued to Applicant Mankato Energy, LLC.
2. That a Site Permit for a Large Electric Power Generating Plant be issued to Applicant Mankato Energy Center, LLC.

Dated this 20<sup>th</sup> day of September, 2004

S/ Allan W. Klein  
ALLAN W. KLEIN  
Administrative Law Judge

Reported: Court Reported  
Janet Shaddix and Associates

### **MEMORANDUM**

#### I.

There are some commentators who were hoping that this report would include a recommendation that biodiesel (or more realistically, a biodiesel blend) be required as the backup fuel for the facility. This report does not contain that recommendation, because there is insufficient reliable information in the record to support it. None of the advocates submitted prefiled testimony containing the necessary factual information, and the information did not come out during the public hearings in Mankato. Some of it did appear in the Environmental Assessment.<sup>5</sup> But only after the hearing, just before the close of the record, did the Minnesota Project, the Soybean Growers Association, and CURE file comments setting forth more of the necessary factual data concerning price, availability, and technical feasibility. It would have been better had that information been provided earlier in the process so that it would have been

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<sup>5</sup> Particularly in appendices E-3 and G, from the Minnesota Soybean Growers Association.

subjected to the hearing process and the Administrative Law Judge could have felt more certain about this reliability.

The Administrative Law Judge does not find anything in the record that clearly rules out the use of biodiesel (at least a biodiesel blend) as a backup fuel, but given the timing and untested nature of the data, he cannot recommend that it be required.

In light of the small number of hours that the facility is likely to be operated using backup fuel, and the fact that a blend is likely to have only a small amount of biodiesel, requiring its use is primarily symbolic.

## II.

The Mankato Energy Center is one of the first instances where the public hearings for the PUC's Certificate of Need and the EQB's Site Permit were held jointly, at one time and in the one place. The Administrative Law Judge found the process to work smoothly. He commends the participants and agency staff for their cooperation in making it work.

All parties, especially the public, should benefit from this innovation. In the past, when there were two separate hearings, often the public would show up at a hearing prepared to discuss their concerns, only to be told that they were at the wrong hearing. Sometimes they were told that they would have to come back at some other time, but sometimes they were told that they had missed the correct hearing, and the issue they wanted to discuss had already been decided. The joint hearing avoids these problems, and allows all concerns to be raised and discussed. At least from the Administrative Law Judge's viewpoint, joint hearings should be encouraged, and should be used whenever feasible.

## III.

On August 12, 2004, MEC filed a Motion to Seal Trade Secret Data. Basically, the Motion sought an order sealing all of the trade secret testimony in exhibits, limiting access to counsel for the parties to the contested case who had signed a protective agreement, along with those representatives of state agencies who have a legal right to access the data. MEC also requested that material be protected while the motion was pending.

Although not explicitly mentioned, the motion was motivated by the fact that an attorney for Excelsior energy (whose Petition to Intervene had been denied) had requested and been granted limited access to the trade secret data in order to decide whether to, and how to, participate in the public hearing in Mankato.<sup>6</sup> As it turned out, Excelsior's counsel attended the first day of the hearing in Mankato, but did not participate, other than to argue a procedural question relating to his status. In support of its Motion to seal the record and limit access, MEC argues that the purpose for giving Excelsior access has now expired, and thus there is no reason for Excelsior to have access to the data once it leaves the Administrative Law Judge's protection.

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<sup>6</sup> Excelsior had petitioned to intervene. The petition was denied, but Excelsior was reminded of its right to participate in the public hearing. Counsel for Excelsior executed a protective agreement, and was given access to the data in order to be able to meaningfully participate in the public hearing.

The Administrative Law Judge granted interim relief, sealing the record while the Motion was under advisement.

In response to the Motion, the Administrative Law Judge sought guidance from the parties and agencies concerning the legality of his attempting to take an action that purported to bind the agencies after the Administrative Law Judge had issued his report and returned the record to the agencies. The Administrative Law Judge raised legal questions about the scope of his jurisdiction and policy questions about the wisdom of attempting to limit the agency's options.

MEC responded that these problems could be avoided if the Administrative Law Judge merely ordered that Excelsior's access to the data had expired because the time for its use of the data (the public hearings) had now passed.

Excelsior responded with an objection to any attempt to limit its authority to access the data, or to limit its ability to use the data to make arguments to the Commission or the Board.

The Administrative Law Judge believes that it is up to the Commission and the Board to decide whether and how Excelsior should be allowed to use the data (or have further access to it) for purposes of making arguments to the Commission or the Board. Excelsior is a non-party, and it should have no more (or no fewer) rights than any other non-party. If Excelsior desires additional access to the data, it must seek permission from the appropriate agency. Then it will be up to the agency to decide the matter.

**A.W.K.**